

# Annual Report 2006



NATIONAL SECURITY RESEARCH DIVISION

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14. ABSTRACT <b>The RAND National Security Research Division (NSRD) addresses a wide variety of issues at the top of the national and international security policy agenda. This annual report offers a general survey of NSRD work in 2006, including research on nation-building, counterinsurgency, nuclear submarine design, space-launch vehicles, military child care, officer career management, China-Taiwan economic relations, and moderate Muslim networks.</b>					
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## Director's Message

For more than 20 years, the RAND National Security Research Division (NSRD) has addressed key issues at the top of the national and international security policy agenda. In 2006, NSRD undertook approximately 150 projects spanning the entire spectrum of security-related issues, from international security and development through intelligence and manpower policy to system acquisition and technology development. Here are some lessons learned from NSRD's 2006 research:

### **Successful Nation-Building Depends on Aligning Resources and Priorities**

The U.S.-led occupation of Iraq has been marked by unforeseen challenges and hastily improvised responses. One reason is that U.S. policymakers have not attempted to systematically draw lessons from earlier operations to apply to current and future missions. In an effort to help remedy this deficiency, NSRD published a guide to nation-building that draws together best practices from 24 previous nation-building efforts throughout the world (page 8).

### **Local Cooperation and Incentives for Defection Could Aid U.S. Counterinsurgency Efforts**

The insurgency in Iraq is not as dissimilar to previous nontraditional conflicts as some have held. A review of five decades of RAND research on insurgency suggests a number of lessons that can be applied to current counterinsurgency efforts. These include cooperation with local governments, incentives for insurgents to defect, greater emphasis on border security, and locally focused pacification efforts (page 10).

### **A Gap in Demand for Nuclear Submarine Design Skills Should Be Filled to Reduce the Risk of Losing Them**

For the first time, the U.S. Navy faces a period of years in which there will be no nuclear submarine design program under way. If design skills atrophy, the next submarine design effort could be burdened with extra costs, delays, and risks. Options to prevent this include starting the design of the next submarine class early or sustaining engineers and designers through the gap with other work, such as updating the design of the current *Virginia* class of attack submarines (page 14).

### **The Latest Expendable Space Launch Vehicles Should Meet National Security Needs Through 2020**

The new family of Evolved Expendable Launch Vehicles (EELVs) developed for military payloads should satisfy all projected U.S. national security needs through 2020, according to a congressionally mandated panel established and supported by NSRD. However, the federal government likely will be the sole user of these vehicles and will therefore need to understand and prepare to pay their remaining life-cycle and improvement costs (page 16).

### **The Promotion of Military Officers Should Not Be So Closely Linked to Time in Service**

Under current policies, officer promotions are made within an "up or out" system closely linked to time in service. This system may provide insufficient incentive for officers to pursue assignments that may enrich their careers or deepen their experience but that do not always represent the quickest, most direct path to the next grade. Competency achievement is now emerging as an alternative basis for officer career management. An NSRD study demonstrates that a competency-based system could be instituted without disrupting the flow of officers through assignments, grades, and careers (page 20).

### **New Approaches May Be Needed to Allocate Department of Defense Child-Care Resources Effectively**

The military child-care system has received nationwide recognition for providing high-quality child care to a large number of military families. While few military families have unmet child-care needs, an NSRD study shows that many would prefer child care from a different source than they now have. Addressing this desire is important because child-care concerns may influence decisions to stay in the military (page 22).

### **China Will Find It Difficult to Employ Economic Coercion Against Taiwan**

Since the early 1980s, the economic relationship between Taiwan and mainland China has expanded dramatically. This growing economic interdependence raises serious concerns about mainland China's ability to exploit economic leverage to unilaterally and coercively change the cross-strait status quo. An NSRD study shows that thus far China has had little success in using economic pressure to win political concessions from Taiwan and that any gain China might realize from such attempts is likely to remain limited in the future (page 26).

### **The United States Must Put More Effort into Building and Sustaining Moderate Muslim Networks**

Taking a page from its fight against the spread of Communism during the Cold War, the United States must do more to develop and support networks of moderate Muslims who are too often silenced by violent radical Islamists, according to an NSRD report. Rather than an afterthought, the building of moderate Muslim networks needs to become an explicit goal of U.S. government policy, with an international database of partners, a well-designed plan, and "feedback loops" to keep it on track (page 28).

## NSRD Research Helps Transform a Developing Nation's National Security Sector

After decades of turmoil, Liberia conducted free and fair elections in 2005 under the protection of a large UN peacekeeping force, and Ellen Johnson Sirleaf was elected president. NSRD developed a design for an integrated national security sector decision-making structure, including a new army and consolidated police force that would guard against a range of security risks while eliminating waste and influence over the country's politics. Steps have already been undertaken to implement the RAND proposals (page 6).

These and the many other research activities and results reported on in the following pages have informed policy decisions facing NSRD's many national and international research sponsors. In addition to these 2006 efforts, work carried out by NSRD during previous years also had major policy impacts during the past year. For example:

- Congressional testimony based on previous NSRD research informed Senate deliberations regarding the U.S. Navy's shipbuilding program and both Senate and House deliberations on the implications of China's defense spending.
- Drawing on previous NSRD research, several RAND analysts made a significant contribution to the Iraq Study Group's report, issued in mid-December. RAND researchers participated in three of the Study Group's four expert panels. These panels' conclusions were reflected in the Group's final recommendations, e.g., that the administration initiate a more active and comprehensive campaign of regional diplomacy.

- The release of NSRD's *Early Results on Activations and the Earnings of Reservists* received wide media attention and is changing the debate on how activation affects reservist earnings.

Another major NSRD effort, started during 2005, greatly expanded during 2006, and continuing during the coming year, focuses on minimizing the threat of improvised explosive devices (IEDs) in Iraq. RAND is participating in an inter-organizational team to support coalition warfighters in Iraq and Afghanistan in their efforts to disrupt the enemy's use of IEDs (page 6). NSRD is also helping defense policymakers understand how insurgencies end and is examining possible end-state scenarios for Iraq and Afghanistan (page 24).

The problems facing our national security community are becoming more complex. As the research efforts summarized in this annual report illustrate, NSRD has repeatedly demonstrated the capability to conduct research that informs decisions on these critical issues. We will continue to tackle such problems in the coming year and those that follow.



**Eugene C. Gritton**

Vice President, RAND Corporation  
Director, National Security Research Division  
Director, National Defense Research Institute

# Overview

The RAND National Security Research Division (NSRD) conducts research on complex national security problems with an emphasis on the most pressing and difficult strategy and policy concerns of high-level defense policymakers and their staffs. NSRD provides independent and objective analytical support to decisionmakers in the Department of Defense (DoD) and elsewhere in the national security and intelligence communities by

- developing innovative solutions to complex problems using multidisciplinary teams of researchers
- providing practical guidance and clear policy choices while also addressing barriers to effective implementation
- meeting the highest research standards using advanced empirical methods and rigorous peer review
- maintaining independence and objectivity by scrupulously avoiding partisanship and vested interests
- serving the public interest by widely disseminating its research publications (subject to the constraints of national security) and encouraging staff to participate in public forums.

## The RAND National Defense Research Institute

NSRD includes the RAND National Defense Research Institute (NDRI), established in 1984 as a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense (OSD), the Joint Staff, the unified combatant commands, and the defense agencies. (Through OSD, NDRI also performs research for the U.S. Navy and the U.S. Marine Corps.) The multiyear FFRDC contract, coupled with NDRI's broad sponsorship and its sponsors' appreciation of its objectivity and independence, allows the Institute to

- conduct a continuous, integrated research and analytic program with particular emphasis on enduring issues that cut across organizational boundaries
- look to the future, maintaining a mid- to long-range focus together with a quick-response capability.

In support of these goals and by virtue of its 22-year relationship with DoD, NDRI has

- accumulated an in-depth understanding of DoD and its needs
- developed a staff that balances the breadth and depth of technical expertise needed to address the complex issues faced by its sponsors
- supported the development and sustained the currency of an advanced suite of models and other tools that facilitate the analysis of issues across the defense policy spectrum.

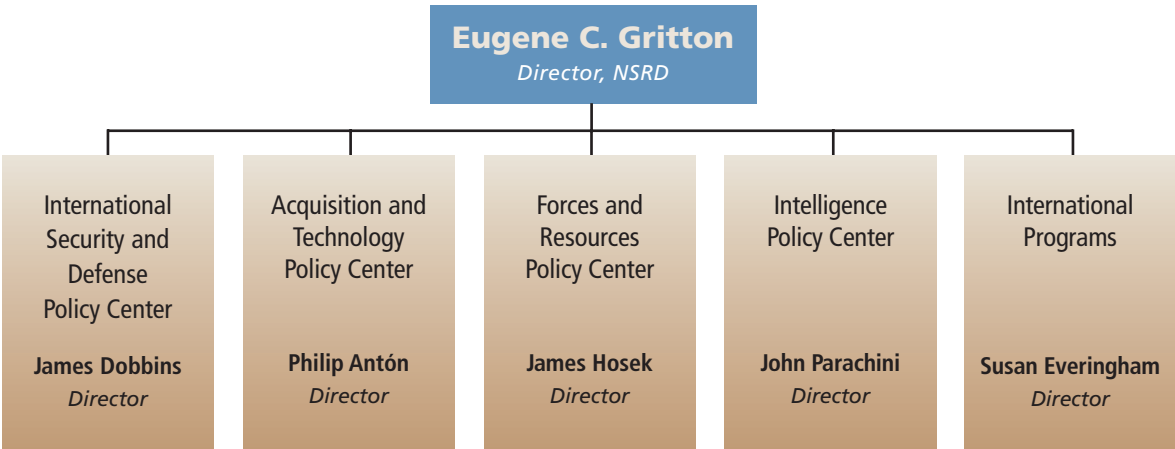
It is noteworthy that, to perform research requiring access to proprietary and other sensitive information not generally accorded commercial contractors, NDRI stays strictly independent of proprietary interests.

## Research Centers and Agenda

NSRD's research is largely conducted in four centers:

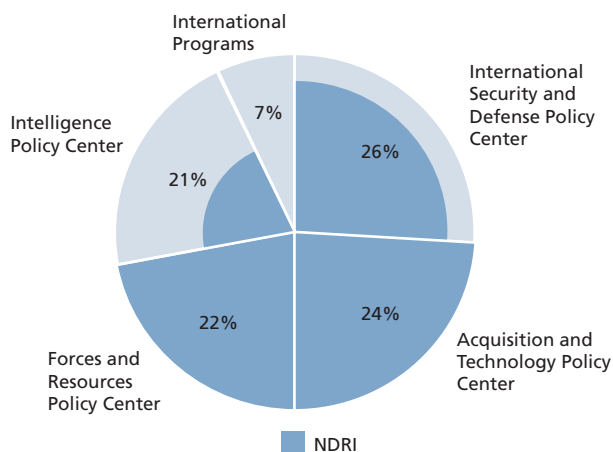
- International Security and Defense Policy Center (see p. 6)
- Acquisition and Technology Policy Center (see p. 12)
- Forces and Resources Policy Center (see p. 18)
- Intelligence Policy Center (see p. 24).

These centers correspond in scope to the purviews of the four under secretaries of defense whom NSRD supports most actively. Most of the work conducted by these centers, taken together, is carried out within NDRI. However, the centers also perform research for such non-DoD sponsors as the intelligence community, the U.S. Coast Guard, the Department of State, allied governments and their ministries of defense, and various foundations. NSRD also houses RAND's International Programs (p. 25), which support the development of research conducted at the intersection of international policy with other issues such as transnational trade and investment, education, health care, information technology, and energy and the environment. Research carried out within International Programs is funded principally by allied governments, foundations, and private contributors. RAND also supports some





**NSRD Revenue by Organizational Element, FY 2006**



**The NSRD research agenda is balanced across major issue areas.**

NSRD research through its own discretionary funds, which are derived from fees earned on client-funded research, independent research and development funds provided by DoD, and unrestricted private donations.

The research agenda of NSRD and NDRI emerges from relationships with clients that are long-standing, mutually reinforcing, and dynamic. NSRD and its FFRDC help their sponsors identify and evaluate new policies, frame alternative ways to implement current policies, and provide other analytic and technical assistance. That assistance includes helping decisionmakers develop political and technological responses to evolving terrorist threats, sustain a robust all-volunteer force, and reform intelligence collection and analysis. At the same time, NDRI acts to sustain and invigorate its core investigational, theoretical, and methodological capabilities—the institutional foundations that will enable it to address pressing national security concerns for years to come.

### The RAND Environment

The RAND Corporation is a private, nonprofit organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. Since its founding in 1948, RAND has studied the most pressing problems of the day, producing in-depth, objective analyses; basic and applied research; and analytic tools used in government, academia, and the private sector.

Policymakers rely on RAND for help in analyzing choices and developments in many areas, including national defense, health care, labor and population, education, civil justice, public safety, and the nation's infrastructure and environ-

ment. RAND also offers several advanced training programs: the Pardee RAND Graduate School's doctoral program in policy analysis and the military fellows programs, which sponsor one-year tours at RAND by mid-career officers in each of the military services and the Coast Guard.

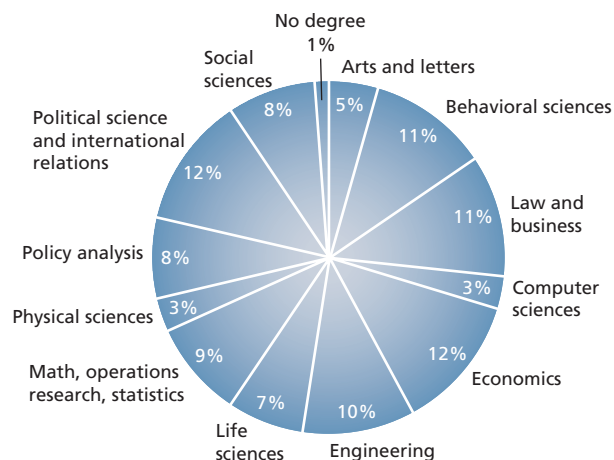
In addition to NDRI, RAND houses two other FFRDCs offering additional analytic resources to DoD:

- **RAND Project AIR FORCE**—RAND's oldest studies and analysis organization—assists leaders of the U.S. Air Force in determining that service's size, shape, and missions.
- **The RAND Arroyo Center** helps U.S. Army policymakers focus on mid- and long-range policy questions analogous to those addressed in the other two FFRDCs.

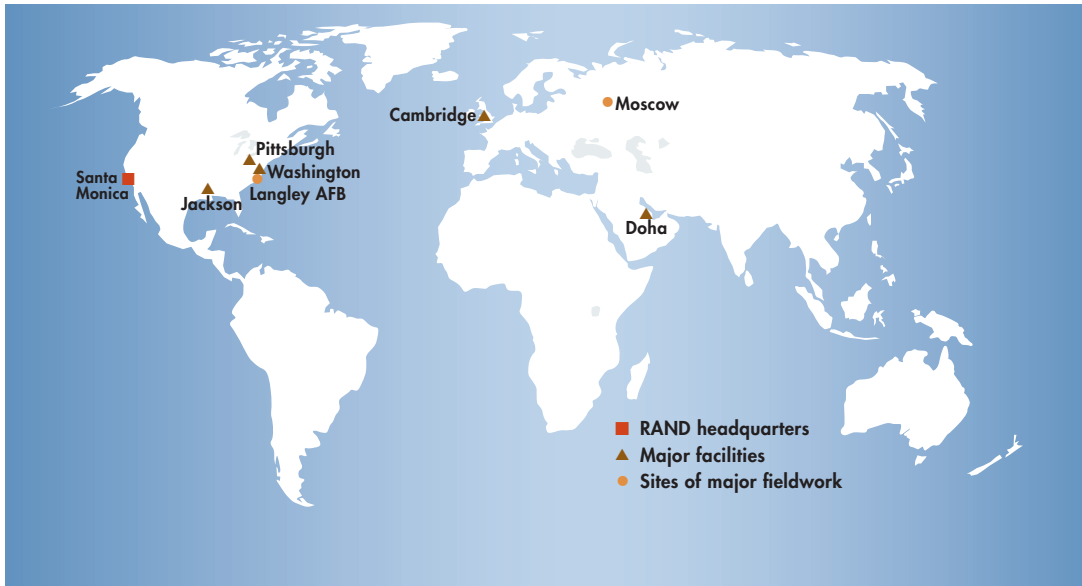
RAND has a matrix-type organization. Research units such as NSRD administer the research programs; the corporation, through its Staff Development and Management Office, recruits, develops, and evaluates the staff, in consultation with the units. Totalling approximately 1,600 full- and part-time employees, RAND's staff is diverse in work experience; in race, ethnicity, and gender; and in academic training. Eighty-nine percent of the research staff hold advanced degrees, with two-thirds of those being doctorates.

NSRD draws on analytical talent in four RAND offices in the United States and several abroad and in a broad array of disciplines. For instance, experts in the social sciences—economists, psychologists, sociologists, and demographers—contribute to studies of personnel and intelligence issues. Work on the effectiveness of evolving military technologies draws on staff skilled in engineering, information systems, computer modeling and simulations, and scenario design and

**Percentage of staff with degree in**



**RAND's multidisciplinary staff provide breadth and depth to research activities.**



**RAND's worldwide research facilities provide global reach and perspective.**

testing. Political scientists and experts in military operations conduct research on the uses and limitations of the application of U.S. military power and alternative forms of leverage in addressing threats to peace and freedom.

NSRD works with other RAND units on topics of mutual interest. For instance, RAND Health—the corporation's largest research unit—brings crucial insight into questions concerned with the provision and management of military medical services and with the effects of combat duty on mental health. Research on defense issues for U.S. allies is done in part through RAND's independently chartered European subsidiary, RAND Europe. This work also provides perspective for U.S. national security issues. The RAND-Qatar Policy Institute, founded in 2003, serves as a source of analysis of the most important and

difficult issues facing public and private decisionmakers in the Middle East, North Africa, and South Asia.

### **Leading the Way in Defense Research and Analysis**

RAND is an international leader in defense analysis. No other organization has been so uniquely influential. Government officials, academics, and business leaders in the United States, Europe, Asia, and the Middle East rely on RAND's advice. They turn to RAND for assistance with the complex problems they must confront. RAND has demonstrated the ability to analyze a problem, place it in the appropriate context, and identify options to help leaders make the best-informed decisions. NSRD's programs are a major component of RAND's overall success and reputation in national security research.

# International Security and Defense Policy Center

U.S. national security decisionmakers must meet the challenge of supporting the governments of Iraq and Afghanistan in combating extremist insurgencies even as they continue to address the broader threats of terrorism and the proliferation of weapons of mass destruction (WMDs). Other challenges include the spread of extremist Islamic terrorism and the increasing U.S. and allied exposure to unexpected threats at home and abroad. Because the United States cannot handle these challenges alone, U.S. policymakers will need to continue efforts to maintain and enhance current coalitions and create new ones.

Research undertaken by the International Security and Defense Policy Center (ISDPC) helps U.S. policymakers better understand how terrorism intersects with other emerging challenges in the post-9/11 world. The center explores the implications of these political, strategic, economic, and technological challenges for U.S. and international security. It assists U.S. national security decisionmakers in developing strategies and policies to manage and adapt to such challenges and to protect American and allied interests at home and abroad.

## Some Recent and Ongoing Projects



Liberian President Ellen Johnson Sirleaf is helped with a sash by Liberian Senior Ambassador-at-Large George W. Wallace, Jr., during her inauguration in Monrovia, January 2006.

### Making Liberia Secure and Successful

RAND was asked by DoD to advise the newly elected president of Liberia on the reorganization of her country's security sector. After years of violence, Liberia is now stabilized by a UN peacekeeping mission. The nation has no army, a handful of separate police forces, and multiple intelligence services. An NDRI team visited Liberia and, drawing on the team's accumulated expertise in nation-building, created an integrated security concept that includes not only public safety and defense against threats from neighboring states but also the ability to deter and defeat organized internal threats. NDRI devised evaluation criteria appropriate to Liberia's needs and applied them to a set of alternative security force

structures. Rather than build up police and military force numbers, NDRI advised the president to consolidate and streamline services and to develop a mobile quick-reaction capacity under police authority. The researchers also recommended changes to national security decision-making structures that would vest authority in a national security council and rationalize intelligence functions. The NDRI analysis emphasized the need for development of the courts and corrections systems. The RAND study was briefed to President Johnson Sirleaf and, at her request, to her cabinet. Since then, steps have been taken to enhance Liberia's national security decisionmaking structure, e.g., strengthening the office of the national security advisor.<sup>1</sup>

SPONSOR: *Assistant Secretary of Defense  
(International Security Affairs)*

PROJECT LEADER: *David Gompert*

### Operational Analysis to Defeat IED Systems

Following a successful NDRI pilot study in 2005, NDRI has been participating in the Operational Analysis Support Team, which also includes the Institute for Defense Analyses, the Center for Naval Analyses, and several other government and industry analytic organizations. The purpose of the Team is to offer analytic support to the Joint IED Defeat Organization and coalition warfighters in Iraq and Afghanistan in their efforts to disrupt the enemy's use of IEDs, in particular roadside bombs. Among NDRI's contributions to the counter-IED effort in 2006 were the development of a methodology to assist commanders in identifying likely locations of IED emplacements in the near term and the elaboration of a computational tool for evaluating competing tactics and technologies. NDRI has used this tool to help assess alternative tactics and systems specific to the counter-IED campaign.

SPONSOR: *Joint IED Defeat Organization*

PROJECT LEADER: *Walter Perry*





In Baghdad, RAND analyst K. Scott McMahon accepts a division coin from LTC Ivan Shidlovsky, senior intelligence officer of the 4th Infantry Division, for the support provided by the NSRD counter-IED research team and its sponsor, the Joint IED Defeat Organization, October 2006.

## Improving Future U.S. Counterinsurgency Capabilities

Many forms of irregular warfare will increasingly be used against the United States and its interests. One form of such warfare—insurgency—presents a central security challenge to the United States. In this project, NDRI is taking a comprehensive look at the insurgency challenge and identifying ways to improve U.S. counterinsurgency (COIN) capabilities, including new organizations, training, intelligence, policy, doctrine, and science and technology issues. The project team is analyzing experience combating various insurgencies, including those in Iraq and Afghanistan, in order to draw lessons that provide insights that inform future COIN capabilities. Insights gleaned thus far include the advantage of trying to stop insurgencies while they are still weak and the need for both security and development activities. Additionally, the research highlights the need to strengthen the security forces and national institutions of countries threatened by insurgencies. NDRI is developing alternative U.S. COIN strategies and assessing their implications for DoD COIN requirements, viewed within the context of the larger interagency and international coalition environment. The goal is to recommend new approaches to COIN, a revised investment strategy, and possible changes to current U.S. government organizations (within DoD as well as in the Departments of State and Justice) in order to improve near- and longer-term COIN capabilities.

SPONSOR: *Combating Terrorism Technology Task Force, Office of the Secretary of Defense*

PROJECT LEADERS: *John Gordon and David Gompert*

## Chinese Responses to U.S. Military Transformation

Over the past decade, Chinese military strategists have keenly observed changes in U.S. national strategy and military transformation. The acceleration of its own military modernization suggests that China is not dissuaded by U.S. military

pro prowess but instead is driven by a range of strategic and military motivations to keep pace. In this study, NDRI examined the constraints, facilitators, and potential options for Chinese responses to U.S. transformation efforts, especially with respect to the question of whether Taiwan moves toward or away from formal independence. The researchers focused on four types of counter-transformation options that China may pursue (most likely in combination): conventional modernization with an emphasis on anti-access operations and the ability to strike at perceived U.S. vulnerabilities; subversion, sabotage, and information operations; missile-centric strategies; and the attainment of a network-centric warfare capability. The researchers offered possible U.S. counterresponses to such courses of action (e.g., planning defensive measures and the augmentation of network-centric platforms).<sup>2</sup>

SPONSOR: *Office of Force Transformation, Office of the Secretary of Defense*

PROJECT LEADER: *David Gompert*

## Russia's Economy: Signs of Progress and Retreat on the Transitional Road

Sixteen years after the demise of the Soviet Union, the Russian economy can still be appropriately characterized as transitional. It has been unclear, however, where it lies on the spectrum between state-controlled and market-oriented resource allocation, along with the pace and even the direction of any movement toward either. NDRI sought to shed light on these ambiguities. The following conclusions of this research effort are of potential interest to U.S. policymakers. First, about 35 to 40 percent of the variance in Russia's economic growth is explained by changes in oil and natural-gas prices. Second, the volume of employment in the private sector has increased impressively since 1996, and major securities-rating agencies have raised Russia's sovereign debt status from "junk" to investment grade. Third, economic relations with the central Asian states reflect the Russian economy's high growth rather than simply their use to expand Russian economic influence in these countries. Finally, Russia's defense sectors have thus far not prospered as a result of Russia's growing economy.<sup>3</sup>

SPONSOR: *Office of the Secretary of Defense*

PROJECT LEADER: *Charles Wolf, Jr.*

1 For more information, see *Making Liberia Safe: Transformation of the National Security Sector*, David C. Gompert, Olga Olikier, Brooke Stearns, Keith Crane, and K. Jack Riley, MG-529-OSD, 2007. Online at <http://www.rand.org/pubs/monographs/MG529/>

2 For more information, see *Chinese Responses to U.S. Military Transformation and Implications for the Department of Defense*, James C. Mulvenon, Murray Scot Tanner, Michael S. Chase, David Frelinger, David C. Gompert, Martin C. Libicki, and Kevin L. Pollpeter, MG-340-OSD, 2006. Online at <http://www.rand.org/pubs/monographs/MG340/>

3 For more information, see *Russia's Economy: Signs of Progress and Retreat on the Transitional Road*, Charles Wolf, Jr., and Thomas Lang, MG-515-OSD, 2006. Online at <http://www.rand.org/pubs/monographs/MG515/>

## A Guide to Nation-Building

The primary objective of nation-building is to make a violent society peaceful.

- Security, food, shelter, and basic services should be provided first.
- Economic and political objectives should be pursued once first-order needs are met.
- Objectives need to be scaled to match resources. Not doing so will lead to mission failure. Peace enforcement during conflict is, on average, 10 times more expensive than an operation in which all local combatants agree to accept peacekeepers.

Nation-building involves the use of an armed force within a broader effort to promote political and economic reforms. The objective is to transform a society emerging from conflict into one at peace with itself and its neighbors. The United Nations and the United States have managed dozens of nation-building efforts—many of them since the end of the Cold War.

Despite this wealth of experience, the U.S.-led occupation of Iraq was marked by unforeseen challenges and hastily improvised responses. One reason is that U.S. policymakers had not systematically tried to draw lessons from earlier operations. Corrective measures are under way. The administration has begun to make institutional arrangements to ensure a more professional approach to nation-building contingencies. The United Nations is moving in a parallel direction. As a contribution to that effort, the RAND Corporation has published *The Beginner's Guide to Nation-Building*, which draws together best practices from 16 previously published case studies<sup>1</sup> and eight others that are in preparation.

### Planning Operations

The guide begins with a set of observations and guidelines related to planning nation-building missions, then takes up the various tasks involved. Among the lessons: Mission planning needs to involve regional experts, people with experience in prior nation-building operations, and political leaders. It needs to set objectives, marshal adequate resources, establish an institutional framework for managing the intervention, and create consultative forums to draw in all the governments and organizations whose contributions will be required. Other planning issues:

- **Approach.** Broadly speaking, there are two approaches to nation-building:
  - Co-option, in which the intervening authorities try to redirect competition among existing institutions for power and wealth from violent to peaceful channels. This is a common approach of UN-led peacekeeping missions.
  - Deconstruction, in which the intervening authorities dismantle the state apparatus and build a new one. This is the approach taken by many U.S.-led peace enforcement missions.
- **Priorities.** The prime objective of any nation-building operation is not to make an authoritarian government democratic or a poor society rich but to make a violent nation peaceful. If basic needs for safety, food, and shelter are not being met, money spent on political or economic development is likely to be wasted.

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1 *America's Role in Nation-Building: From Germany to Iraq*, James Dobbins, John G. McGinn, Keith Crane, Seth G. Jones, Rollie Lal, Andrew Rathmell, Rachel Swanger, and Anga Timilsina, MR-1753-RC, 2003, and *The UN's Role in Nation-Building: From the Congo to Iraq*, James Dobbins, Seth G. Jones, Keith Crane, Andrew Rathmell, Brett Steele, Richard Teltschik, and Anga Timilsina, MG-304-RC, 2005. Online at [http://www.rand.org/pubs/monographs\\_reports/MR1753/](http://www.rand.org/pubs/monographs_reports/MR1753/) and <http://www.rand.org/pubs/monographs/MG304/>

- **The Golden Hour.** The weeks following the arrival of foreign troops tend to be a time of maximum possibility. Resistance is unorganized, spoilers unsure of their future. If the intervening authorities are to take advantage of this opportunity, they need to control enough personnel and material resources to secure and supply at least the capital.

### Marshaling Resources to Meet Priorities

The guide takes up the tasks of the nation-building process in order of priority. Because those missions that do falter frequently do so because of a failure to align resources and objectives, the guide offers formulas for the necessary size and cost of each mission component—soldiers, civil administrators, etc. Some of the principal insights are that

- **Security** is provided by soldiers, police, and a judicial and corrections system. Establishing a modicum of security requires a military force that is large enough—as many as 20 soldiers per thousand inhabitants—to disarm, demobilize, and reintegrate former combatants. Military or international civilian police forces are needed to protect citizens from criminals and violent political groups and to mentor a reformed local civilian police force. Sufficient support and funding must be extended to the police force and the judicial and corrections system.
- **Humanitarian relief** agencies are, for the most part, professionally staffed and well resourced. The challenge is in coordinating with the intervening military organizations, with which most humanitarian agencies are reluctant to align because any such alignment could limit their access to people in need.
- **Governance** is a high priority because local institutions will have to provide education, health care, electricity, telecommunications, water, and sanitation. Funding from the intervening authorities will have to run around 10 percent of the country's preconflict gross domestic product.
- **Economic stabilization** requires a reasonably stable medium of exchange. Early attention should be given to creating or strengthening a central bank and other financial institutions. Donor support will be required to balance government expenditures and revenue.
- **Democratization** should be viewed as a way to redirect the competition for wealth and power from violent into peaceful channels, not as an abstract exercise in social justice. Ideally, elements of civil society should be allowed to develop before national elections are held. However, institutions based on representative government are typically the only form of reconstituted state authority acceptable to most of the population.
- **Infrastructure** and development will depend on the ability of the intervening authorities and the host government to control inflation and finance the government's budget, among other things. Donors should be approached for emergency assistance to repair physical infrastructure, and the World Bank for loans enabling subsequent improvements.

Illustrative Costs of Nation-Building			
Sector	Personnel		Cost (millions of US\$)
	Local	Int'l	
Light peacekeeping			
Military		8,000	360
	15,000		50
Police		1,000	170
	11,000		18
Rule of law			18
Humanitarian			170
Governance			260
Economic stabilization			30
Democratization			50
Development and infrastructure			390
Total, light peacekeeping	26,000	9,000	1,520
Heavy peace enforcement (additional requirements)			
Military		57,000	12,640
Police		7,000	1,080
Development and infrastructure			360
Total, heavy peace enforcement	26,000	73,000	15,600
NOTE: Estimated annual costs in a hypothetical country of 5 million people with a per capita gross domestic product of \$500. Heavy totals incorporate light requirements. Total costs do not sum due to rounding.			

### Overall Costs

The costs of nation-building depend on the size of the population affected, its urbanization, its income, and the level of conflict within the society. Costs also depend heavily on whether all parties to the conflict collaborate with a peacekeeping force, or whether they must be compelled to do so, in which case the mission becomes one of peace enforcement. The table above gives an estimate of annual costs for each type of mission in a relatively small, poor country, such as Haiti or Liberia. The total cost comes to \$1.5 billion annually for a peacekeeping mission and to almost \$16 billion for peace enforcement. Military and police personnel requirements scale similarly. As demonstrated by the costs, full-scale peace-enforcement missions are feasible only in relatively small societies about which the intervening governments feel very strongly.

It has been said that no war plan can survive first contact with the enemy. Neither can a nation-building plan survive contact with the nation to be rebuilt. The test of any such plan is not in its ability to predict every twist and turn of the evolving operation, but in its success in matching ends to means.

### For more information, see

*The Beginner's Guide to Nation-Building*, James Dobbins, Seth G. Jones, Keith Crane, and Beth Cole DeGrasse, MG-557-SRF, 2007. Online at <http://www.rand.org/pubs/monographs/MG557/>

## Lessons from RAND Counterinsurgency Research

- Organization for counterinsurgency must be improved. The Provincial Reconstruction Teams that have been implemented in parts of Iraq and Afghanistan are a start.
- Amnesty and reward programs should be implemented or expanded to push insurgents out of the movement.
- Given the cross-border elements of insurgency in both Iraq and Afghanistan, border security systems should be evaluated.
- Pacification efforts should be focused on the lowest political echelons and combined with census-taking and national identification cards.

As part of the global war on terror, Operations Enduring Freedom and Iraqi Freedom showcased the dazzling prowess of the U.S. military in conventional operations. Yet the subsequent challenges posed by insurgency and instability in both Afghanistan and Iraq have proved much more difficult to surmount. Moreover, America's difficulties in those two countries may embolden future adversaries to instigate insurgencies of their own. Thus, both the current and future conduct of the war on terror demand that the United States improve its ability to conduct counterinsurgency operations.

The RAND Corporation has studied counterinsurgency operations for decades. Topics have ranged from theories of why insurgencies take place to the details of tactical operations undertaken against them, in cases as varied as those against the British in Malaya, the French in Algeria, and the United States in El Salvador. In 2006, as a contribution to the improvement of U.S. COIN capabilities, RAND published *On "Other" War: Lessons from Five Decades of RAND Counterinsurgency Research*.

Because the great majority of RAND's COIN research is based on Cold War examples, its current relevance might be challenged. However, it is possible to overstate the differences between current instances and their precedents. For example, the fragmented nature of the insurgency in Iraq is often regarded as almost unique. Yet many insurgencies during the Cold War were highly fragmented, with elements fighting each other as well as the counterinsurgents. We therefore review historical cases not with the notion that their lessons may be uncritically applied but with the idea that they still have lessons to teach.

### Shaping the Battle Space

RAND was intimately involved in the formulation of the two major theories about how to approach the local population, which in an insurgency is the battle space. The first theory, commonly called "hearts and minds," argues that in traditional societies, economic and technological development fragment old institutions before new ones can take their place and that this institutional gap feeds insurgency. The prescription for success is therefore to win the public's support (their "hearts and minds") for the government by ameliorating some of the negative effects of development while speeding up the provision of modernity's benefits.

Other researchers at RAND, steeped in economics and systems analysis, responded that what mattered was not what the population thought but what it did. The key to winning the population over was therefore to provide it with incentives to cooperate with the government and disincentives to resist. In response to this "cost/benefit" theory, other RAND scholars pointed out that to the extent that these incentives were viewed as coercive, an insurgency might actually gain from them.



## Defining a Winning Doctrine

Beyond the debate over high-level strategy, RAND researched specific elements of COIN practice, several of which are of particular relevance today.

**Organization.** In seeking to understand the organizational strengths and weaknesses of insurgent movements, particularly the Viet Cong, RAND went beyond the traditional military intelligence focus on the enemy order of battle. Topics included insurgent learning and adaptation, motivation and morale, recruitment, and logistics. RAND worked to develop new metrics for measuring progress against insurgent organizations. RAND researchers also conducted extensive work on the proper organization of government COIN forces. For example, RAND concluded that much of the U.S. military was overly focused on conventional war, leading to handicaps in the conduct of COIN.

**Amnesty and Rewards.** RAND studied the use of incentives to convince insurgents to surrender or provide intelligence. In several cases, such incentives proved both successful and cost-effective, for example in Malaya, where the British operated a program of awards and informal amnesty for insurgents who cooperated against their former comrades. In Vietnam, the Chieu Hoi amnesty program was less successful, but it still led to the inactivation of thousands of insurgents at relatively low cost.

**Border Security.** Many insurgencies rely on support outside the target nation or on cross-border sanctuaries. Sealing the borders could thus be very useful in COIN, as the French discovered in Algeria, where the Morice Line sealed both the Tunisian and Moroccan borders to insurgents. RAND analysts, after initial skepticism about border security, began to advocate such measures in Vietnam as infiltration from the north became a bigger component of the war, though a functional border control system was never implemented.

**Pacification.** Another COIN strategy is to combine security and development in a given political unit. The central finding in RAND's pacification research was that more progress could be made by attempting to pacify villages and other small units than by trying to formulate and implement ambitious plans for the nation as a whole.

Several recommendations for current and future COIN can be derived from RAND's prior research:

- Organization for COIN must be improved. The Provincial Reconstruction Team model that has been implemented in parts of Iraq and Afghanistan is a good start but does not go far enough. This model, which unites U.S. civilian and military personnel with the local government, should be expanded.
- Amnesty and reward programs should be implemented or expanded. These programs work in conjunction with military efforts to push insurgents out of the movement without having to fight them to literally the last person.



U.S. military officers and the Afghan provincial governor inaugurating a Provincial Reconstruction Team.

- Given the cross-border elements of insurgency in both Iraq and Afghanistan, border security systems should be evaluated for both conflicts.
- Pacification efforts should be focused on the lowest political echelons and combined with census taking and national identification cards.

## Expanding the Legacy

RAND has renewed its counterinsurgency research in recognition of the growing importance of this type of operation in the war on terror. A major ongoing project reviews U.S. experience in Afghanistan and Iraq in light of previous insurgencies to draw lessons as to how DoD can better prepare and equip itself for counterinsurgency operations. A second focuses on the end phase of insurgencies, drawing again on historical examples, to help the Marine Corps see the way forward in Iraq's Al Anbar province. Other RAND FFRDCs are also supporting this work. A recent Project AIR FORCE study assessed the threat of insurgency and suggested strategies the U.S. Air Force could employ in helping meet it. Another project compared the effectiveness and life-cycle costs of different aircraft types performing various COIN tasks.

Of the various assets RAND brings to bear in supporting its DoD and intelligence community sponsors, one of the most valuable is its long institutional memory and experience. In the counterinsurgency realm in particular, RAND applies that experience to help ensure that the lessons of history are not forgotten.

### For more information, see

*On "Other" War: Lessons from Five Decades of RAND Counterinsurgency Research*, Austin Long, MG-482-OSD, 2006. Online at <http://www.rand.org/pubs/monographs/MG482/>



# Acquisition and Technology Policy Center

**T**he United States has achieved undisputed superiority in traditional military force-on-force conflicts. It has demonstrated the ability to

- project power rapidly from the air, sea, and ground to remote areas of the world
- wage war from afar with fewer casualties than its adversaries suffer
- moderate collateral damage to reduce its effect on larger U.S. goals.

This technological advantage, however, does not provide America and its allies with an unchallenged or risk-free environment. Adversaries making effective use of low-technology IEDs and experimenting with high-technology computer network operations have shown their ability to expose U.S. and allied military and civilian interests to novel challenges, threats, and dangers. In response, U.S. defense policymakers have expanded their area of concern beyond traditional, symmetric threats. As DoD fills increasingly diverse and nontraditional roles, U.S. forces are exposed to new vulnerabilities and face the challenges of acquiring and employing a wide range of capabilities in a flexible, adaptive, and creative manner. They will need to accomplish this against a backdrop of

- the Iraq War, with its intense budgetary pressures and its degrading impact on existing systems and equipment
- growing system costs and overruns on major new systems acquisitions
- increasing requirements for the interoperability of U.S. and allied weapon systems and forces
- a technology and industrial base that is increasingly pressured by sporadic acquisitions and governed by global commercial drivers rather than military markets.

NSRD's Acquisition and Technology Policy Center helps the defense and intelligence communities achieve and sustain an affordable technological advantage over the diverse array of current and future threats while examining trade-offs and coping with management and fiscal challenges.

## Some Recent and Ongoing Projects

### Statutory and Regulatory Compliance Effects on DoD Program Management

Managers of weapon system acquisition programs and their staffs have often voiced concerns about the burden of complying with federal statutes or regulations requiring certain business and oversight processes. The essence of the concerns is that the regulatory burden translates into cost increases and schedule delays and has adverse effects on system performance. While many other studies have addressed this topic, few have succeeded in generating the empirical evidence needed to inform the policy debate. To fill this gap, NDRI developed a Web-based data collection tool to capture program staff's estimates of hours spent on compliance efforts. A total of 316 individuals in seven DoD program offices were recruited to use the Web tool to estimate biweekly the time they spent on regulatory compliance-related activities over the course of a year. Interim results were reviewed with program staff every two to three months for validation and verification of the Web-based results. Where results indicated little or no regulatory effect, researchers suggested ways to mitigate some of the burden perceived by office staff.

**SPONSOR:** *Director, Acquisition Resources and Analysis,  
Office of the Under Secretary of Defense  
for Acquisition, Technology, and Logistics*

**PROJECT LEADERS:** *Jeffrey Drezner and Irv Blickstein*

### Capability-Based Assessment of the Net-Centric Operational Environment

The net-centric operational environment (NCOE) refers to the infrastructure and environment that enables the application of net-centric operational (NCO) capabilities at the joint task-force level and below in major combat operations and related scenarios. The central idea of the NCOE is that if the joint force fully exploits both shared knowledge and technical connectivity, the result will be a dramatic increase in mission effectiveness and efficiency. NDRI was asked to help carry out an assessment of the needed NCOE capabilities to help identify, assess, and prioritize joint military capability needs. NDRI's analyses included identifying gaps between the desired capabilities and what current acquisition programs are likely to deliver. These gaps may be of a material nature, so that they can be filled by acquiring physical systems, but they may also exist as a result of training, doctrine, or other less physical factors. This study was particularly challenging in that future NCO concepts are evolving and depend in turn on the NCOE that enables them. Since many current military simulations do not model sufficiently the effects of information flows on command and control decisions, NDRI assembled a suite of advanced tools and human-in-the-loop experiments to help inform the effects of NCOE options on these decisions, pushing the state-of-the-art in such investigations.

**SPONSOR:** *Directorate of Command, Control,  
Communications, and Computer Systems (J-6),  
Joint Staff*

**PROJECT LEADERS:** *Isaac Porche and Louis Moore*



The aircraft carrier USS *George Washington* in the Caribbean Sea as part of a training and readiness deployment of U.S. naval forces along with Caribbean and Latin American navies for enhanced maritime security, April 2006.

Relevant historical data are being sought and used to test hypotheses regarding which factors might be decisive in determining whether the effects on U.S. plants are positive or negative. The analysis will also describe how the importance of each factor is likely to vary across types of manufacturing activity and DoD sourcing policies or programs. These issues have obvious implications for the health of the defense industrial base and the manufacturing jobs provided by the poten-

tially affected plants. Such implications will be of likely interest to Congress and DoD policymakers.

SPONSOR: *Under Secretary of Defense for Acquisition, Technology, and Logistics*

PROJECT LEADER: *Frank Camm*

### New Roles for U.S. Aircraft Carriers

Equipped with aircraft, helicopters, and unmanned aerial vehicles and possessing large open and covered spaces, significant human resources, and massive electrical-power-generation capabilities, aircraft carriers represent substantial resources that the U.S. Navy may be able to more fully exploit. To that end, RAND convened groups of experts to examine possible noncombat roles for carriers, as well as combat roles outside those most commonly planned for. The panels considered responses by carriers to catastrophes occurring in the U.S. homeland, both natural and terrorist-caused, and to a variety of security-related scenarios including civil wars and other crises in diverse regions of the world. The RAND research team concluded that, to meet future demands, U.S. aircraft carriers will require a range of new capabilities. Carriers will need to be better able to mix and match personnel, aircraft, and other assets to emerging tasks. They will need capabilities to perform more extensive surveillance and reconnaissance, conduct longer-range air operations, and operate in nuclear environments. And they will need to be more modular, be able to deploy on shorter notice, and be prepared to handle more casualties than they can today.<sup>1</sup>

SPONSOR: *Program Executive Office for Aircraft Carriers, U.S. Naval Sea Systems Command*

PROJECT LEADER: *John Birkler*

### Economic Evaluation of DoD Use of Non-U.S. Suppliers

In recent years, U.S. weapon system programs have relied on non-U.S. plants to manufacture parts and physical materials. Foreign sources may now account for 4 percent of total program value. It is unclear whether the use of foreign plants hurts domestic plants by taking away some of their business or instead helps them by increasing technology transfer and system interoperability, which might make them more competitive across a broader array of markets. NDRI has undertaken a project to identify the range of possible effects on U.S. plants of the foreign supply of defense material to DoD.

### Multiyear Procurement of the F-22A Fighter

In fiscal year 2007 Congress approved and funded a multiyear procurement (MYP) of 60 F-22A aircraft and their engines across fiscal years 2007–2009. This approval was contingent on an independent assessment by an FFRDC of the savings from using an MYP compared to three single-year procurements. NDRI was asked to provide this assessment and to inform the Secretary of Defense's certification that the savings would be substantial enough to justify an MYP contract. NDRI began by developing a baseline estimate of the cost of the annual contracting approach. This estimate was based on the historical, certified cost data from the Air Force and contractors, as well as other sources. The research team evaluated the reasonableness of the MYP savings by assessing a range of cost savings initiatives and comparing the result to the difference between baseline costs and those negotiated for the MYP. NDRI also collected and analyzed historical MYP savings data dating back to 1982 from other fixed-wing aircraft programs to permit a comparison with the F-22A procurement. Finally, the team compared the baseline cost estimates with estimates developed by the Air Force Cost Analysis Agency.

SPONSOR: *Under Secretary of Defense for Acquisition, Technology, and Logistics*

PROJECT LEADER: *Obaid Younossi*

<sup>1</sup> For more information, see *Leveraging America's Aircraft Carrier Capabilities: Exploring New Combat and Noncombat Roles and Missions for the U.S. Carrier Fleet*, John Gordon IV, Peter A. Wilson, John Birkler, Steven Boraz, and Gordon T. Lee, MG-448-NAVY, 2006. Online at <http://www.rand.org/pubs/monographs/MG448/>

## Sustaining the Ability to Design Nuclear Submarines

The current lack of an ongoing submarine design effort raises the possibility that skills could be lost. This study recommends that the Navy consider:

- Stretching out the design of the next submarine class and starting it early or, if that seems too risky
- Sustaining design resources at the shipyards, their vendors, and in the Navy itself that exceed those supported by the demand, so that the next class may be designed on time, within budget, and without elevated risk.

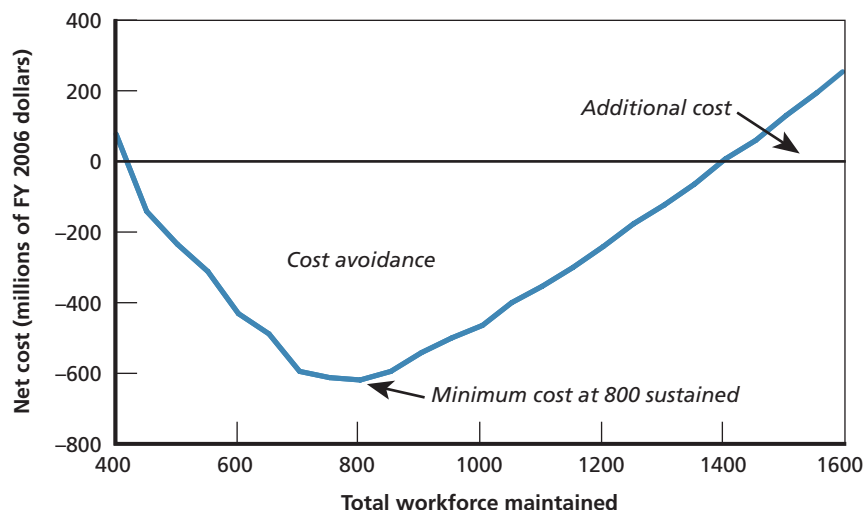
For the first time, the U.S. Navy faces a period that could last a number of years in which there will be no design program under way for a new class of nuclear-powered submarines. This gap in demand for the services of submarine designers and engineers raises concerns that this highly specialized capability could atrophy, burdening the next submarine design effort with extra costs, delays, and risks.

In 2005, the Navy's Program Executive Office for Submarines asked NDRI to evaluate the cost and schedule impacts of various strategies for managing submarine design resources. Of concern were the design resources at Electric Boat and Northrop Grumman Newport News (the two shipyards that have designed previous classes of nuclear submarines), as well as design resources at the key vendors that provide components for submarines. Also of concern were the technical resources at the various Navy organizations that participate in submarine design programs.

### At the Shipyards

The RAND team evaluated two basic workforce management strategies: Sustain some number of workers in excess of those needed to meet the residual demand during the current gap, or let the workforce erode and then rebuild it to design the next class of submarines. The team found the former to be less expensive. The best number of workers to sustain depends on various assumptions. As a baseline, the team assumed a design duration similar to those for preceding classes (15 years), a workload similar to that for the recently designed *Virginia* class, and a start date for designing the next class (2014) that is consistent with current Navy ship replacement plans. Under these assumptions, Electric Boat would accomplish the next design least expensively if, during the gap, it sustained a minimum of about 800 designers and engineers (see the figure at right), and Newport News if it sustained about 1,050. These numbers, which include sufficient staff to meet the residual demand, go up or down by a few hundred if workload and start date vary over reasonably likely ranges.

The design workload could also be varied both spatially and temporally. It could be split between the two shipyards, in an effort to maintain two capabilities. This does not convey an advantage in the costs RAND assessed or in workforce sustained, even if it is assumed that division of the workload would cause no inefficiencies, which seems unlikely. The workload could also be stretched out. For example, a 15-year effort could be stretched to 20 years and, importantly, started early (in 2009), thus preempting much of the workforce draw-down. In that event, no extra workforce need be sustained to minimize cost (assuming all the work is done by one yard), and the cost could be lower than that achievable with a 15-year design. There are some drawbacks to stretching out the design (e.g., a greater possibility of design obsolescence by the time the first of class is launched); these drawbacks must be considered in any decision regarding this option. However,



Base case: At Electric Boat, net cost, relative to taking no action, is lowest if 800 workers are sustained.

the alternative—sustaining workers in excess of demand—also has an important drawback: the need to find the designers and engineers something to do that will allow them to maintain their skills. Several options are available, for instance, putting the *Virginia* class through further design evolution (“spiral development”) or creating new designs that may not be built. Even in combination, however, these may not be sufficient for skill retention equivalent to that achievable by work on a new submarine class.

### At the Vendors

The potential problems arising from a design gap extend beyond the shipyards. Numerous submarine components are provided by vendors that must design the products that they produce. The NDRI team conducted a survey that asked firms about the various issues involved, some of them common to shipyard critical skills (demographics, time to proficiency), some of them more specific to vendors (presence of competitors, percentage of work devoted to design). The team found that, while for any one dimension most firms appeared likely not to encounter problems in contributing to submarine design after a gap, some appeared to be potentially at risk in more than one respect.

### At the Naval Organizations

The Navy designs certain submarine components and exercises responsibility for ensuring that various aspects of design are consistent with safety and performance standards. The team reviewed workforce structure and trends in pertinent Navy organizations in light of their roles and came to the following conclusion: Sufficient design expertise in the various major skill categories was unlikely to be sustained to support hull, mechanical, and electrical submarine design functions at the Naval Surface Warfare Center’s Carderock Division. Between \$30 million and \$35 million per year would be required to sustain sufficient staff in submarine design in excess of those needed during the design gap. Again, here (and in the case of some vendors), avoiding the greater part of the design gap (e.g., by stretching out the design of the next class and starting it early) would obviate the need for concern over skill loss.

### Recommendations

The RAND team reached the following recommendations from its analysis:

- Seriously consider starting the design of the next submarine class by 2009, to run 20 years, taking into account the substantial advantages and disadvantages involved.

If the 20-year-design alternative survives further evaluation, the issue of a gap in submarine design is resolved, and no further actions need be taken. If that alternative is judged too risky, the team recommended the following:

- Thoroughly and critically evaluate the degree to which options such as spiral development of the *Virginia* class or design without construction will be able to substitute for new submarine design in allowing design professionals to retain their skills.
- If options to sustain design personnel in excess of demand are judged on balance to offer clear advantages over letting the workforce erode, then the following actions should be taken:
  - Request sufficient funding to sustain excess shipyard design workforces large enough to permit substantial savings in time and money later.
  - Conduct a comprehensive analysis of vendors at high risk to determine the interventions required to preserve critical skills.
  - Invest \$30 million to \$35 million annually in the Carderock submarine design workforce in excess of reimbursable demand to sustain skills that might otherwise be lost.

### For more information, see

*Sustaining U.S. Nuclear Submarine Design Capabilities*, John F. Schank, Mark V. Arena, Paul DeLuca, Jessie Riposo, Kimberly Curry, Todd Weeks, and James Chiesa, MG-608-NAVY, 2007, or the *Executive Summary*, MG-608/1-NAVY, 2007. Online at <http://www.rand.org/pubs/monographs/MG608/>

## Meeting National Security Space Launch Needs

- The current two families of Evolved Expendable Launch Vehicles should satisfy national security needs through 2020.
- NASA use of these vehicles for science and space station resupply missions will be needed to ensure workforce proficiency and system reliability.
- As the sole likely customer, the federal government should have unrestricted access to program technical and financial data.
- Requirements should be more clearly defined before a program to satisfy launch-on-demand military needs is undertaken.

In 1994, the U.S. National Space Transportation Policy set the priorities for the future of the government's satellite launch program: reliable and affordable access to earth orbit. Government agencies were to maintain strong launch systems while modernizing space transportation capabilities and reducing costs.

More than a decade later, through combined investment from DoD and industry, the Evolved Expendable Launch Vehicle (EELV) rockets (Atlas V and Delta IV) are maturing into reliable, state-of-the-art space transportation systems. These rockets launch communications and reconnaissance satellites for the military and weather and scientific research satellites for other government agencies.

In January 2004, Congress directed the Secretary of Defense to establish an expert panel to evaluate future national security space launch needs. DoD selected NDRI to provide analytical support to the panel in its deliberations, which took place between May 2005 and May 2006. The panel's report was released in late 2006.

A central finding of the panel was that the EELV-program rockets should satisfy all projected national security needs through 2020. No technological breakthroughs were deemed likely or needed in space propulsion or rocket design in the near future. However, the federal government likely will be the sole user of these launch vehicles and will therefore need to pay remaining life-cycle costs.

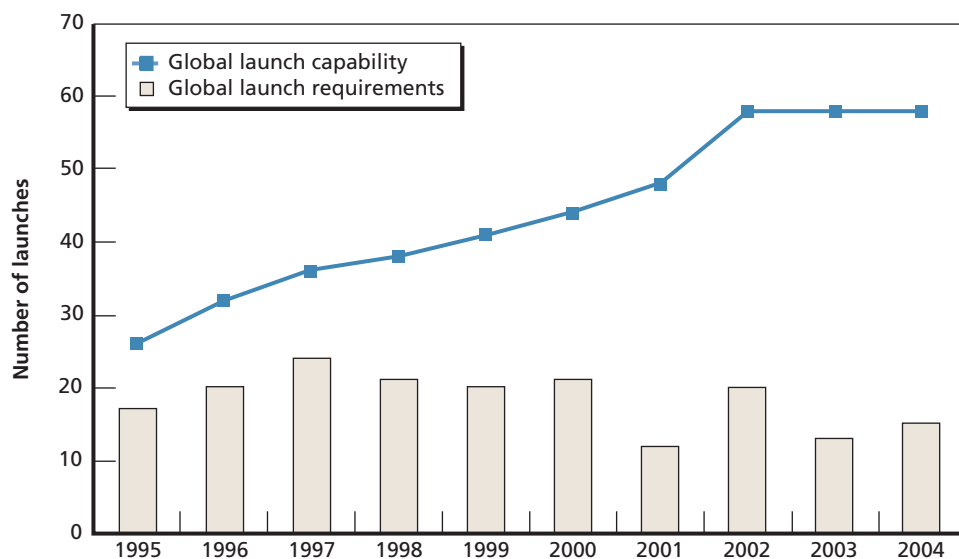
The eight-member panel also found that while the two EELV rocket families are still early in their life cycles, both appear able to become "workhorse launch vehicles for the future." The panel called them "true successes" critical to national security.

### The Collapse of Commercial Launch Demand and Its Implications

Originally, DoD and the program's contractors (Boeing and Lockheed-Martin) expected that the EELV program would be used by a large and emerging commercial satellite market. In fact, this expectation was a primary reason the contractors invested so heavily in EELV design. The commercial demand was expected to support two contractors, lowering mission costs and boosting reliability. But the commercial launch market collapsed in the early part of the current decade (see the figure at right) because of the growing use of fiber optic and cellular technologies and the greater capabilities achievable within a single satellite.

Given this drop in demand, the panel found it unlikely that the Lockheed and Boeing space launch vehicles would be able to attract other types of commercial payloads; they face stiff competition from lower-cost state-supported space launch programs in other nations. Nevertheless, the panel recommended that the government explore measures that may help the EELV rockets compete in the price-driven commercial market.





Global launch capability for geosynchronous communications satellites has been running ahead of requirements.

Government demand, however, is also waning. The panel's research suggests that the number of launches the U.S. government will procure is likely to decline annually over the next 15 years. The level may drop low enough to jeopardize the proficiency of the workforce supporting the two rocket families. To expand use of the rockets, the panel recommended that NASA should continue to be encouraged to use the EELV program rockets to launch its space science and post-Space Shuttle resupply missions to the International Space Station. The potential for cost savings and the increased reliability from more frequent launches argue strongly for cooperative launch planning between DoD and NASA.

### Shift of the Customer Base to the U.S. Government Alone

The lack of commercial demand means that the federal government has become the primary user of these space launch vehicles and must be prepared to pay for and manage the full cost of maintaining the EELV program. Unlike programs for near-exclusive government use, these systems were developed on a commercial basis, with limited government access to information on their design and development. Thus, the panel recommended that the U.S. Air Force seek contract changes to acquire unrestricted access to the program's technical and financial records. These data would allow the Air Force to evaluate the performance and total ownership costs of each rocket family to aid in making future decisions about the system.

In parallel with the panel's deliberations, DoD and the Federal Trade Commission reviewed a proposal by Boeing and Lockheed-Martin to merge their two space launch programs while still producing both rocket families. Called the United Launch Alliance (ULA), this joint venture (approved in October 2006) is expected to save \$150 million annually by eliminating duplicate overhead. While the panel did not take a position on the creation of the ULA, it did recommend that Air Force personnel be placed within the two contractors and the ULA to gather data for program management.

### Operational Responsive Space and Competitive Systems

Both Congress and the U.S. Air Force have expressed interest in developing a more responsive launch model, known as Operational Responsive Space (ORS). Experiments and studies are in progress. For small payloads and launches on very short notice, this new system would supplement the current "launch on schedule" of the EELV program rockets with one that would "launch on demand" to meet the largely unplanned needs of the U.S. military.

The panel report noted that a new ORS launch program with capabilities beyond those available today has many potential benefits, but found little evidence that mature, well-defined requirements exist for such a system. In addition, the panel concluded that the extraordinary investment necessary to rapidly create a more responsive launch system would not be cost-effective until the requirements are clearly documented, operational concepts are defined, and potential payloads are identified.

Finally, the panel supported allowing new commercial providers to compete with the EELV program for launches of government payloads. The government has held discussions with the Space Exploration Technologies Corporation (SpaceX) about a larger version of SpaceX's Falcon rocket family competing with the EELV program. The panel recommended clear public policies be put in place to facilitate such competition.

#### For more information, see

*National Security Space Launch Report*, Forrest McCartney, Peter A. Wilson, Lyle Bien, Thor Hogan, Leslie Lewis, Chet Whitehair, Delma Freeman, T.K. Mattingly, Robert Larned, David S. Ortiz, William A. Williams, Charles J. Bushman, and Jimmy Morrell, MG-503-OSD, 2006. Online at <http://www.rand.org/pubs/monographs/MG503/>

# Forces and Resources Policy Center

To maintain a highly effective volunteer force, DoD must employ policies that ensure a sufficient quantity and quality of volunteers, encourage personnel to take on particular duties or assignments, and entice some personnel to make the military their career and to become leaders. In this context, does DoD offer the kind of careers, compensation, and benefits that will allow it to attract and keep the personnel it requires? Has the prospect of being deployed to a dangerous area for a long period hurt active and reserve recruiting, and have deployments reduced reenlistment and, among those leaving active duty, reduced their willingness to join the reserves?

The question about the reserves is of particular relevance today. Over the past few years, the reserves have been redefined as an operational reserve, with units scheduled to deploy concurrently with active-duty units. However, reservists have not been called up uniformly across reserve units and occupations; combat and civil affairs, for instance, have been heavily tapped. Has this differentially affected recruiting and retention?

Health care is an area of particular DoD focus. Is the DoD health-care system adequately flexible to meet changing needs? For example, how can the Department evolve to meet the changing demands for health care among the beneficiary population that is both expanding to include more reservists and retirees as well as more disabled while at the same time meeting requirements to downsize the medical force and unify the medical command?

NSRD's Forces and Resources Policy Center has been intimately involved for more than three decades in helping the United States create and preserve the all-volunteer force. The Center continues a varied program of research intended to help DoD adapt its organizations, policies, and processes to current and evolving manpower and other resource challenges.

## Some Recent and Ongoing Projects

### Health Savings Accounts for Military Retirees

DoD retirees, active-duty dependents, and non-active-duty dependents have become increasingly likely to choose DoD's TRICARE insurance plan even if they have alternate health coverage available through an employer or elsewhere. To control escalating health-care costs associated with this increased demand, DoD has begun to consider altering the structure of the health-care benefits provided to its beneficiaries who are not in uniform. Among those structural alterations would be to make health savings accounts (HSAs) available. NDRI has developed a health expenditure model that predicts beneficiary choices and estimates costs to DoD and value to beneficiaries if DoD were to make HSAs available. The simulation model shows how all these outcomes change when DoD's contribution to the HSA changes. Researchers are also imputing families' marginal tax rates, are simulating plan choice over time from military retirement to age 65, and will be predicting the effect of decreases in the value of the retiree health benefit on active-duty retention.

**SPONSORS:** *Assistant Secretary of Defense (Health Affairs);  
Director, Program Analysis and Evaluation,  
Office of the Secretary of Defense;  
and NDRI Advisory Board*

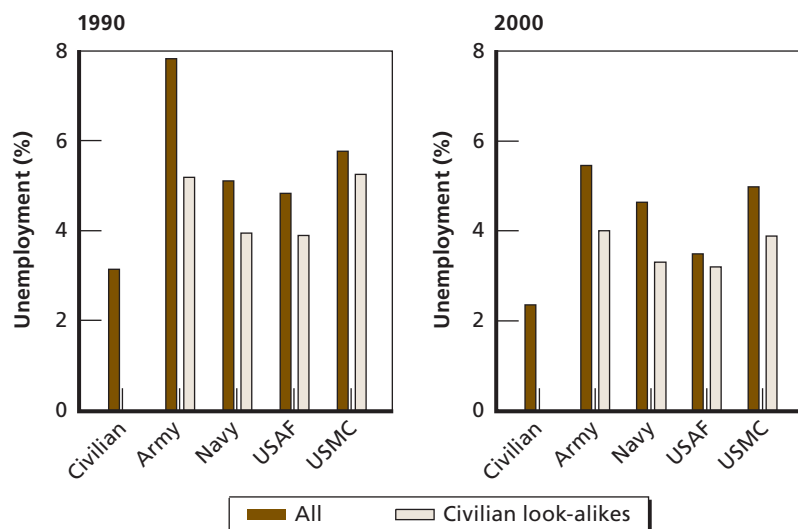
**PROJECT LEADERS:** *Susan D. Hosek and Dana Goldman*

### Indefinite Reenlistment of Senior Noncommissioned Officers

In 1998, following congressional approval, the U.S. Army shifted its senior enlisted force from a fixed contract system to indefinite reenlistment, theoretically increasing the prestige of senior noncommissioned officers (NCOs) by recognizing them as career soldiers. The Army program requires all soldiers reaching the rank of E-6 with ten years of service to reenlist indefinitely, mirroring the management of officers and eliminating reenlistment paperwork. The Army has thus far been the only service to adopt this program. This NDRI study analyzes past and present arguments for and against this policy that have been made by service representatives, policymakers, and enlisted personnel. Focus groups of Army NCOs and of NCOs from the other services indicated reservations about indefinite reenlistment. Participants were concerned that force planning could be complicated by the unpredictability of NCO separation dates, that individual career transitions out of the military could be awkward to arrange in the absence of a firm date for the end of a service obligation, that the quality of the NCO corps could decline without reenlistment screening, and that retention and morale could suffer with the loss of reenlistment bonuses and other benefits. The intended program result of boosting NCO morale does not appear to have been realized. However, there was no evidence that the Army policy was negatively affecting retention. The study team concluded that neither the costs nor benefits of indefinite reenlistment are strong enough to merit a change in policy for either the Army or the other services.<sup>1</sup>

**SPONSOR:** *Under Secretary of Defense for Personnel  
and Readiness*

**PROJECT LEADER:** *Laura Miller*



Civilian wives who demographically resemble military wives still have lower unemployment rates than military wives.

National Science Foundation, the defense industry, the federal labs, universities, the Office of Personnel Management, and DoD, including the armed services. NDRI will publish a volume of the papers prepared for the meeting, and a report by RAND researchers will derive the policy implications of the papers presented and other relevant literature, including data analysis done by RAND.

SPONSOR: *Under Secretary of Defense for Personnel and Readiness*

PROJECT LEADER: *James Hosek*

### Employment and Earning Gaps Between Military Spouses and Civilians: An Update

Previous studies have shown that military wives—women married to U.S. military service members—are more likely to be unemployed and to be earning less than their civilian counterparts. However, these studies relied on somewhat dated information and have little to say about military husbands. This study revisits the gaps in employment and earnings between military and civilian wives using the 2000 census and extends these analyses to include military husbands. Military spouses continue to be at a relative disadvantage in the labor market compared with civilian spouses. Observable individual and contextual factors (race/ethnicity, education, mobility, location, children at home) explained some of these disparities for one gender or another, one service or another, or certain of the employment and earnings outcomes. Generally, however, some of the civilian-military difference was a result of unobserved factors (see the figure above), possibly including military spouses' taste for work and/or employer bias against them. Thus, policies that target demographic disparities such as mobility, location, and child care cannot entirely close the gaps.<sup>2</sup>

SPONSOR: *Under Secretary of Defense for Personnel and Readiness*

PROJECT LEADER: *Nelson Lim*

### Human Capital for Science and Technology in the United States

The Under Secretary of Defense for Personnel and Readiness asked NDRI to organize a high-level meeting to consider the evidence as to whether or not U.S. dominance in science and technology has ebbed and the implications of the same for national security, including defense personnel. The meeting included presentations on the scientific investments of nations, the consequences of globalization, the role of knowledge in the wealth of nations, whether globalization of the science and technology workforce threatens U.S. economic leadership, whether the United States needs more scientists, and ways to improve the compensation and management of federal science and technology workers. The meeting took place in November 2006 and brought together leaders from the National Academies, the

### Blending Active and Reserve Manpower Within Military Units

DoD has suggested that "blending" active and reserve component workforces in military units be implemented more broadly to better capitalize on the capabilities and strengths of the reserve components, thus leading to a more flexible, capable force. NDRI researchers examined existing organizational designs that facilitate integration of the reserve and active workforces to ascertain whether personnel management practices need to be changed to help implement those designs. They reviewed service reports and directives and other relevant literature on the subject, including the organizational change literature, and interviewed service officials and subject-matter experts. They concluded that workforce integration efforts aimed at improving operational accomplishment of mission, balancing operations tempo, and increasing capital asset utilization would be more successful than efforts aimed at other goals, such as resolving personnel management differences. The research team recommended that the services provide policy guidance for workforce integration and consider performing more evaluation of workforce integration against the goals they have set for it.<sup>3</sup>

SPONSOR: *Under Secretary of Defense for Personnel and Readiness*

PROJECT LEADER: *Harry Thie*

1 For more information, see *Indefinite Reenlistment and Noncommissioned Officers*, Laura Miller, Joy S. Moini, Suja Sivadasan, Jennifer Kavanagh, Miriam Shergold, and Ronald Plasmeijer, MG-553-OSD, 2007. Online at <http://www.rand.org/pubs/monographs/MG553/>

2 For more information, see *"Working Around the Military" Revisited: Spouse Employment in the 2000 Census Data*, Nelson Lim, Daniela Golinelli, and Michelle Cho, MG-566-OSD, 2007. Online at <http://www.rand.org/pubs/monographs/MG566/>

3 For more information, see *Factors to Consider in Blending Active and Reserve Manpower Within Military Units*, Harry J. Thie, Roland J. Yardley, Peter Schirmer, Rudolph H. Ehrenberg, and Penelope Speed, MG-527-OSD, 2007. Online at <http://www.rand.org/pubs/monographs/MG527/>

## Toward More-Flexible Officer Career Management

Officer promotions are closely linked to time in service. This does not motivate officers to pursue assignments that may enrich their careers but that do not always represent a quick path to promotion.

- A system based on competency achievement would allow more flexibility without affecting average assignment counts, times in grade, or promotion probabilities.
- Care should be taken in implementing such a system to ensure fairness and allow the services to define competencies.

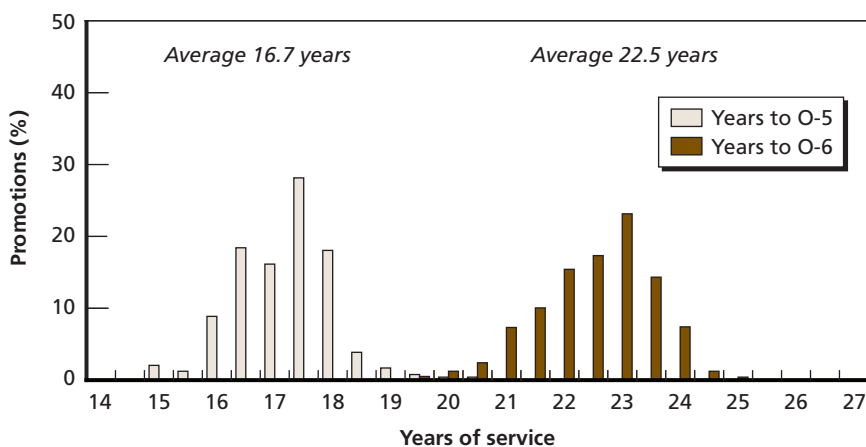
DoD and the military services are transforming the way they manage the total force to respond to changing missions, requirements, and environments. However, laws governing military personnel force management remain basically unchanged. Officers are commissioned, promoted, continued, separated, and retired under laws and policies that have been in place for at least the past quarter of a century. These laws and policies have met the needs of the services reasonably well, but there is a growing sense of dissatisfaction with aspects of the officer management system, manifested in concerns that it limits return on investment in people, restricts choice and flexibility, encourages turnover, creates prescriptive and standardized career paths, and is not family friendly.

NDRI undertook an analysis that examined how a more-flexible career management system could be implemented. The analysis focused on which rules and policies should change and what the possible effects would be on officer career paths and promotion probability. Of particular interest to OSD was how an alternative set of laws and policies could accommodate longer careers and longer assignments for some officers.

### Working Within the Current System

Current law and policy fix total time in grade (assuming promotion) at about six years for officers in each grade from O-3 (lieutenants in the Navy and captains in the other services) through O-5 (commanders in the Navy and lieutenant colonels in the other services). O-6s (captains in the Navy and colonels in the other services) serve from about four to nine years in that grade. Mandatory retirement for those grades ranges from 20 to 30 years of service.

The fixed and relatively short grade and career tenures force a trade-off between the length of assignments officers have and the number of different assignments they can have. If average assignment length increases, then officers must, on average, have fewer assignments in each grade and



In a competency-based system, there might be considerable variation in years of service to promotion.

throughout the course of their careers, and will thus be less broadly experienced. Lengthening careers could help ameliorate the effects of longer assignments, but only in an officer's terminal grade if promotion timing does not change.

Promotion timing could be delayed if careers are lengthened. However, under current law and policy, promotion timing would have to be delayed for all personnel. Movement within the whole system would slow, and the analysis suggests that officer retention after 20 years of service would have to significantly increase in order to have enough people to meet requirements. Delaying promotions across the board would thus offer no additional flexibility—it would be as rigid as the current system but with slower movement of people.

### Effects of a Competency-Based System

A more-flexible officer career-management system would allow longer careers and would allow officers having a wider range of years in service to be promoted to the next grade (i.e., they would have a wider “promotion zone”). Conceptually, such a system would manage careers according to competencies rather than according to time, where “competencies” refer to the officers’ knowledge, skills, and abilities that enable them to perform their jobs proficiently and meet the mission requirements of their organizations. A key assumption of the analysis is that competencies can be developed over time through training, education, and work experience.

NDRI modeled a career-management system in which officers become eligible for promotion not based on the time they have spent in a grade but on the experience they have gained through assignments, education, and training. All officers still become *eligible* for promotion at some point in each grade, and they are still *selected* for promotion on the basis of demonstrated ability and potential to perform competently in the next grade. But by allowing broader promotion zones, the system modeled by NDRI allows officers to accept career-enriching assignments that, under the current system, would make them “late” for promotion. The result would be a system in which promotion times vary, without necessarily putting such officers at a disadvantage for promotion.

The variation is shown in the figure at left, which depicts percentages of Army infantry officers who would be promoted to O-5 and O-6 over several years, as modeled for a hypothetical competency-based system. For both grades, fewer than half of the promotions would occur in a single year. There would be substantial numbers promoted before and after the primary year.

Model runs demonstrated that allowing more variation in promotion timing would not necessarily change the average number of assignments officers have, the average time in grade, or promotion probability. A competency-based system could be flexible enough to accommodate longer assignments—although if promotion eligibility guidelines do not change, average time to promotion would probably increase. A competency-based system could also make better use of longer careers, in the sense that it could accommodate additional mid-career assignments and increase the number of officers having desired combinations of key assignments.

### Implementing a Competency-Based System

Moving to competency-based officer personnel management will not require dramatic statutory changes. Even without changes in law, DoD could provide the services with more flexibility in managing officer promotions by amending certain policy documents. The key modifications required to law and policy would be ensuring that officers remain competitive (not just eligible) if they are not selected at the same time that many of their peers are. The greatest amount of work in implementing a competency-based system will fall to the services, which will have to identify the competencies conferred by each assignment, school, and training event—and will have to do so continually as the threat and technology environments change.

The new system must be perceived as fair by the officers themselves. In that regard, the system's flexibility should work in its favor. Officers will naturally be concerned about possible changes in aspects of the “deal” explicitly and implicitly understood between themselves and DoD, but the new system's allowance for more individually tailored career paths should be attractive. Still, officer behavior is not easy to predict, and outcomes may not turn out as favorable as expected. It will thus be important that implementation be gradual and take advantage of demonstration projects and quantitative analysis to test key aspects of the new system before putting it in place for everyone.

#### For more information, see

*Challenging Time in DOPMA: Flexible and Contemporary Military Officer Management*, Peter Schirmer, Harry J. Thie, Margaret C. Harrell, and Michael S. Tseng, MG-451-OSD, 2006. Online at <http://www.rand.org/pubs/monographs/MG451/>



## Child-Care Need Among Military Families

- The potential need for child care can best be met by a variety of DoD-sponsored and non-DoD options.
- DoD should make an effort to better understand the relationship between child care and attrition, especially among parents of children receiving care in DoD-sponsored child-development centers.
- In allocating its child-care resources, DoD should consider the housing patterns of its families and the child-care market around each of its installations.

The military child-care system has received nationwide recognition for providing high-quality child care to a large number of military families. DoD provides care for as long as 12 hours per day in child-development centers (CDCs) and even longer if necessary in family child-care homes. However, in spite of the vast size of the system, not all military families utilize DoD-sponsored child care. Many families remain on the waiting lists—especially for CDC care. Other families simply prefer alternatives off base.

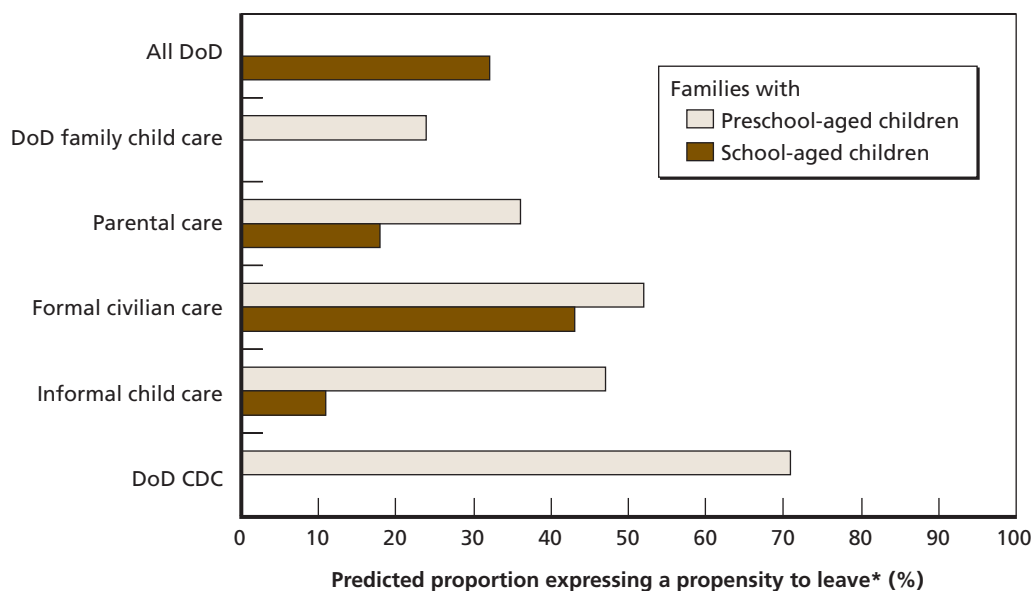
DoD is committed to meeting the child-care need among military families. To monitor progress toward that goal, DoD requires a meaningful measure of that need. NDRI undertook an analysis of child-care need and utilization among military families and the factors that influence the child-care choices that military families make. The analysis is based on data obtained through a survey of active-duty military families, including activated reservists, fielded in 2004. A total of 1,137 survey responses were received, reflecting a response rate of 34 percent. Although the response rate is low, it is typical of recent surveys of military personnel. In conducting the analyses, the authors weighted the data to account for observable response bias. Statistical analyses allowed the researchers to relate key child-care outcomes to family characteristics, as well as characteristics of the installation.

### Conclusions

**Few military families have unmet child-care need.** Just under 10 percent of military families have unmet child-care need, defined as families that reported that they would like to use a formal child-care arrangement but are not currently doing so. Unmet need is more prevalent among families with preschool-aged children than among those with school-aged children. Among the former, families earning less than \$50,000 per year were more likely to report unmet need, as were dual military families (i.e., families in which both the mother and father are in the military) and single-parent families.

**More families would prefer different child care than they have.** A larger proportion of military families—22 percent—reported that they were not getting their preferred type of child care. Notably, 49 percent of those families wanted some type of DoD-provided care but were not receiving it. Conversely, then, just over half of families with an unmet child-care preference did not want DoD-provided care. As with unmet need, families with preschool-aged children were more likely to report an unmet preference than those with school-aged children.

**Child-care concerns may influence decisions to stay in the military.** Nearly one-third of survey respondents reported that it was likely that child-care issues would lead them to leave the military, suggesting that child care is a retention issue. However, just because individuals report that they are likely to leave the service does not mean that they would act on that sentiment. More information is required to relate propensities to actions. It is nonetheless interesting that families with preschool-aged children were much more likely



Child-care type is associated with families' expressed propensity to leave the military because of child-care issues.

\*The proportion is estimated through submitting expressed propensities to statistical analysis controlling for variables other than type of child care.

to express a propensity to leave the military because of child-care issues. Perhaps parents of older children tend to be older themselves and to have a longer tenure in and stronger commitment to a military career. Families with only one parent or with two military parents were more likely to state an intention to leave, despite the priority DoD accords these families in obtaining DoD-sponsored child care.

**DoD CDC users appear to have a weaker attachment to the military.** The conventional wisdom is that DoD CDC care is the most sought-after and convenient type of child care for military families. Certainly, waiting lists are long, and the subsidy provided to families for using DoD CDC care is larger than the subsidy available for any other type of care. It is therefore surprising that over two-thirds of the parents of preschool-aged children using CDC care report a propensity to leave the military because of child-care issues (see the figure above). That number is well above the corresponding proportion for any other type of child care.

**Housing patterns influence use of DoD-sponsored care.** The distance between a family's home and the installation is related to the type of child care it uses. Families that live off base are less likely to use DoD-sponsored child-care options, and the propensity to use DoD-sponsored care is lower for families living farther from base. It appears that many families that live off base do not find DoD-sponsored care, which is typically located on the installation, to be convenient.

**Local market conditions are related to the child-care choice that DoD families make.** Although DoD-sponsored care is an important option for military families, it is not the only one. Families with preschool-aged children that live in areas with lower median incomes are more likely to use civilian-sponsored care, and families that live in areas with a greater supply of child-care workers are more likely to choose nannies, relatives, or other informal sources than to choose formalized group care.

The relationship between median area income and use of civilian-sponsored child care may reflect the differences in cost of living. Because the income of military families does not vary much by locale, military families that live in affluent

communities may be less willing to pay the market price for civilian child care than those that live in poorer communities.

### Policy Implications

- New approaches may be needed to allocate child-care resources effectively. The survey results suggest that there is no one-size-fits-all approach that can effectively address the child-care needs of military families. Potential need can best be met through a variety of DoD-sponsored and non-DoD child-care options.
- DoD offers substantial support for child care that is provided on military installations, but little support for off-base options. This has substantial implications not only for active-duty personnel who choose to live far from base but also for activated reservists who may have no viable way to access military child-care options.
- DoD spends a disproportionate share of its child-care resources on CDC care, yet CDC users are the most likely to state that they would consider leaving the military over child-care issues. DoD may be interested in achieving a better understanding of the relationship between child care and attrition behavior, particularly for this population.
- In allocating its child-care resources, DoD should consider the housing patterns of families around each of its installations (e.g., the distance between residences and the base, which influences use of DoD-sponsored child care), as well as local community characteristics bearing on the child-care market.

### For more information, see

*Examining Child Care Need Among Military Families*, Susan M. Gates, Gail L. Zellman, and Joy S. Moini, TR-279-OSD, 2006. Online at [http://www.rand.org/pubs/technical\\_reports/TR279/](http://www.rand.org/pubs/technical_reports/TR279/)

America's intelligence enterprise is in an intense state of flux. In recent years, the U.S. intelligence community's abilities to track terrorists, locate weapons of mass destruction, and conduct meaningful counterintelligence programs have been repeatedly called into question. The intelligence community's success depends heavily on how well it responds to these questions to challenges related to resource requirements, intelligence workforce changes, heightened wartime and counterterror operations, and continued public scrutiny.

Managing and harnessing change will be a significant challenge for leaders in the intelligence community. On the collection side, agencies are working to fuse human intelligence with signals and imagery intelligence on difficult targets. With regard to analysis, the community is striving to improve the way it identifies and trains analysts to enhance its ability to mine large data sets. At the same time, intelligence agencies—pressured by the need to balance modernization and operations and adjust to increased oversight—are changing management processes in significant ways.

NSRD's Intelligence Policy Center supplements the intelligence community's own capabilities by analyzing evolving threats so that the implications of U.S. actions may be more fully understood. It helps senior community leaders assess the impact of future global developments on budgets, resource allocation, collection requirements, and human capital needs. It also helps defense policymakers understand the changing role of intelligence in warfighting. Importantly, the Intelligence Policy Center is becoming one of a number of centers of "transformational thinking" for the intelligence community, a place to turn for innovative concepts and unconventional solutions.

## Some Recent and Ongoing Projects

### Emerging Issues for the Intelligence Community

The agencies making up the intelligence community are like most other organizations: The issues requiring immediate attention often soak up all available resources. One of NSRD's greatest values to its sponsors is its ability to stand apart from the flow of daily demands and take the long view, informed by NSRD's awareness of the needs and perspectives of its sponsors. For example, in 2006, an intelligence organization asked NSRD to identify twenty issues (culled to the five most critical) that ought to be on the organization's agenda for the next two to five years but that might not be. The NSRD research team surveyed Web sites and consulted experts across subjects ranging from terrorism and war to health, education, and demographics. Then the team asked two expert panels—one made up of senior RAND researchers and the other of distinguished outsiders—to winnow the list. The panels graded each issue on several dimensions: How important is it? How far "off the radar" is it? How likely is the issue to become visibly important in the next few years? Issues reflected in the results included new nuclear powers, what is next in terrorism, and the revolution in biology and biological terror.

SPONSOR: *Intelligence Community*

PROJECT LEADER: *Gregory Treverton*

### How Insurgencies End: Outlook for Al Anbar and Iraq

In time, insurgencies end. The current insurgency in Iraq, centered in Al Anbar province, is not beyond analysis or without historical precedent. It is occurring in a definable, if dynamic, situation that has similarities and differences with the situations of past insurgencies elsewhere. Applying multiple research approaches, this study examines how insurgencies end and applies historical insights to Iraq, with special atten-



**Iraqi soldiers take the lead in a patrol with U.S. Marines in Barwanah, Al Anbar province, July 2006.**

tion to the Sunni-dominated Al Anbar province. In seeking correlates from past insurgency endings, the study team surveyed 89 cases from RAND's insurgency database. This quantitative treatment was supplemented with a more in-depth examination of six specific case studies selected for similar attributes to Al Anbar and Iraq; related scholarly studies were also reviewed. Both quantitative and qualitative segments of the project called attention to key issues for Iraq, particularly the difficulty governments with limited popularity have defeating a strong insurgency, the importance of sanctuary, and the small likelihood of a negotiated settlement. The study particularly emphasized the centrality of a strong U.S. military counterinsurgency role, better intelligence, and a more competent Iraqi army and police force.

SPONSOR: *U.S. Marine Corps Intelligence Activity*

PROJECT LEADER: *James Bruce*

# International Programs

In addition to the four policy research centers described in the preceding pages, NSRD houses RAND's International Programs, which facilitate the growth of RAND's internationally focused research and administer studies that address international affairs but that are funded by sponsors outside DoD and the intelligence community (and typically outside the U.S. government). This research lies at the intersection of international policy with other issues, such as transnational trade and investment, education, health care, information technology, and energy and environment. These issues often have important implications for U.S. national and international security. International Programs include three centers:

- The RAND Center for Middle East Public Policy (David Aaron, director) analyzes political, social, economic, and technological developments in and around the Middle East. Projects have included assessments of demographic and labor market trends in Islamic countries and, in collaboration with RAND Health, a landmark study on building a successful Palestinian state.
- The RAND Center for Asia Pacific Policy (William Overholt, director) has addressed issues such as China's economic transformation, the debate in South Korea over reunification with the North, science and technology planning in South Korea, and terrorist networks in Southeast Asia.
- The RAND Center for Russia and Eurasia (Jeremy Azrael, director) assists political and economic change within those countries, particularly through the RAND Business Leaders Forum, an organization of leading corporate executives from Russia, the United States, and Western Europe.

## Some Recent and Ongoing Projects

### Modernizing the North Korean System

North Korean society operates within a political-economic system that is outmoded, inefficient, and isolated. The RAND Center for Asia Pacific Policy has undertaken a project to specify the characteristics of the North Korean system that impede its modernization, progress, and productivity, as well as its more fruitful integration in the global economy and society. Working from that characterization, researchers have been identifying economic, political, and security instruments that could contribute to overcoming the impediments to modernization and integration, thus improving living conditions for the North Korean people, as well as the legitimacy and survival prospects of the North Korean regime. Four operational plans have been devised with varying emphases on the economic, political, and security domains. These illustrative operational plans also include assessments of the costs and obstacles to implementation each would encounter in North Korea, as well as the anticipated reactions and relative receptivity to the several operational plans from not only the North Korean government but also the other five governments participating in the multilateral talks. The project is being carried out in close cooperation with institutions in China, Japan, Russia, and South Korea. To this end, workshops have been held over the two-year project period in each of the countries involved.

**SPONSORS:** *Smith Richardson Foundation and The John D. and Catherine T. MacArthur Foundation*

**PROJECT LEADER:** *Charles Wolf, Jr.*

### Natural Gas and Israel's Energy Future

Israel has few contacts with the most prominent energy exporting nations, and it has few domestic sources of energy. However, it has many of the characteristics of an advanced industrial economy with the associated energy needs. While Israel's energy planning problem is complex, natural gas is likely to be one of the solutions. It is available domestically, potential foreign sources are plentiful, and it burns cleanly. Nonetheless, there are challenges to an increased use of natural gas within Israel, including political and economic issues related to supply planning over the long term. The Center for Middle East Public Policy has joined with RAND Infrastructure, Security, and Environment to undertake a project addressing these issues. The research team will seek to illuminate how global trends may affect Israel's choices and outcomes, what international experience with natural gas has been to date, and what technology choices will be of importance. Although the project has a strong strategic perspective, the analyses will be developed to inform crucial decisions made in the next three years that will affect the following three decades. RAND will be carrying out this research in cooperation with partners within Israel, under the guidance of a steering committee that will include members of the Israeli government and other stakeholders.

**SPONSORS:** *Individual donors*

**PROJECT LEADER:** *Steven Popper*

## Chinese Economic Coercion Against Taiwan

The dramatic growth in trade between mainland China and Taiwan has raised concerns that China will exploit its economic leverage to coerce political change. However, China faces difficulties in doing so:

- Taiwan's president has succeeded in resisting domestic pressure for greater liberalization of trade with China.
- China has been unsuccessful at getting Taiwan's business people to press for political changes advantageous to the mainland.
- Economic sanctions against Taiwan could damage the mainland economy, some sectors of which rely on Taiwan for investment.

Since the early 1980s, the economic relationship between Taiwan and mainland China has exploded, driven by far-reaching economic and political reforms on both sides and by powerful natural complementarities in the two economies. The growth in cross-strait economic ties raises serious concerns about the ability of the People's Republic of China to exploit economic leverage to unilaterally and coercively change the cross-strait status quo. In 2006, NDRI undertook an analysis of the potential of Chinese economic coercion of Taiwan. The study's main conclusion is that, although China's growing economic influence over Taiwan is a source of concern, Beijing has often had difficulty translating its economic ties into effective political leverage on the issues with which it is most concerned.

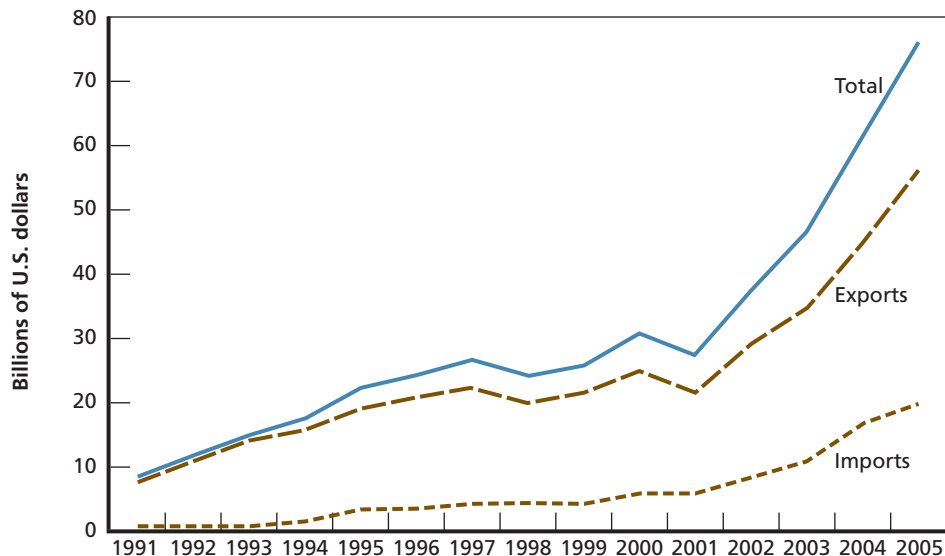
Since the early 1990s, cross-strait trade has risen substantially, from less than \$10 billion in 1991 to almost \$80 billion in 2005 (see the figure at right). As a result, each economy relies upon the other for important contributions, and each would suffer great economic pain and dislocation in the event of a major disruption in that relationship. But Taiwan depends on the mainland market for a far higher percentage and a far broader range of its economic activities than the mainland depends on Taiwan for. Exports to the mainland equaled more than one-tenth of Taiwan's entire gross national product (GNP) by the end of 2003. China is also the number-one venue for Taiwan's foreign investment and the number-one production base for many of Taiwan's most profitable exports.

The expanding cross-strait relationship raises serious security questions for Taiwan. Many analysts have expressed concern that China will exploit its economic relationship with Taiwan in ways that could undermine long-standing U.S. positions: opposition to either side unilaterally or coercively altering the status quo across the strait and insistence that any resolution to cross-strait conflict be acceptable to the people of Taiwan. Beijing has, in fact, either employed or publicly contemplated many forms of economic pressure against Taiwan at various times over the course of the past two decades.

Economic experts warn that if China were able to close down key parts of the cross-strait economic relationship, Taiwan would be vulnerable to a major recession and other severe forms of economic dislocation. The hundreds of thousands of Taiwan businesspeople now working on the mainland are also vulnerable to pressure and harassment from mainland authorities.

Since 1979, Taipei has struggled to strike a balance between growth and security in its cross-strait economic policies. Both government and business leaders strongly desire to draw on mainland China's rapid growth to rescue Taiwan's increasingly challenged international competitive position. At the same time, the last two administrations have both sought to limit Taiwan's economic dependency on Beijing. Advocates of liberalizing cross-strait trade and investment relations—in particular, Taiwan's influential mainland-invested business community (the *Taishang*)—have won the lion's share of these





Taiwan's trade with mainland China has exploded during the last 15 years.

upon investment from Taiwan, and these would likely suffer badly in the event of a cutoff of trade and investment.

But Beijing's difficulty in translating economic into political leverage is not necessarily good news. Following Taiwan's 2004

battles. However, presidents Lee Teng-hui and Chen Shui-bian of Taiwan have periodically shown real willingness to resist such pressure and can point to some significant successes in limiting Taiwan's economic dependence on China.

Most experts on economic diplomacy agree that the level of economic deprivation one country can inflict on another rarely, by itself, effects the desired political change. Other factors usually influence the initiator's ability to convert economic influence into political leverage. For Beijing, a key challenge is identifying and effectively exploiting "conduits of influence" within Taiwan's political system—that is, politically influential classes or groups with a stake in promoting the policies that Beijing supports. Indeed, in recent years, Beijing has often been frustrated in its efforts to exploit this economic leverage, at least in the short term. For example,

- The 2004 Taiwan presidential election disproved widespread forecasts that Taiwan's voters would oust President Chen out of worry about the poor state of Taiwan's economy and eagerness for expanded cross-strait economic relations. More generally, although Taiwan's voters have largely supported candidates who favored improved cross-strait economic ties, there has been a continuous slide in support for reunification with China on terms that Beijing prefers.
- Most of Taiwan's businesspeople have become highly adept at keeping their true political inclinations and activities hidden from leaders in both Taiwan and mainland China, thereby frustrating Beijing's efforts to pressure them into forming a "lobby" for Beijing's interests. The business community has been unwilling or unable to use its influence to pressure Taipei into making significant political concessions to Beijing.
- Taiwan's political leaders have also resisted China's burgeoning economic might. President Chen has proven himself fairly adept at politically disarming many advocates of a more rapid opening of cross-strait relations.
- Finally, China must reflect upon the potential blowback that large-scale efforts at economic coercion against Taiwan might have upon its own economy and society. Certain key sectors of China's economy are highly dependent

presidential election, China's frustration over its lack of success in employing economic levers of power temporarily undermined the position of those who were most optimistic about the long-term efficacy of economic power and cross-strait economic integration. It perhaps also strengthened the hand of those who advocate using more nakedly coercive measures against Taiwan. These tensions have eased in the past year as Beijing has adopted a more restrained, seductive strategy toward Taiwan and as Chen Shui-bian has encountered numerous political setbacks at home.

Taipei's fears about cross-strait economic relations may also increase threats to stability in the region. Fearing that Beijing's rapid economic growth will eventually grant it overwhelming political leverage, many of Taiwan's more strongly pro-independence leaders believe that the time to push for measures to formalize a more independent relationship is "now or never."

For Beijing, there is an irony in its efforts to exploit its economic leverage to bring Taiwan closer to reunification. Cross-strait economic links appear to have the greatest impact on Taiwan's politics when Beijing is least aggressive in trying to exploit them, as it has been since early 2005. When Beijing has used high-profile, high-pressure economic tactics, they have tended to backfire, creating powerful opposition in Taiwan and undermining the political effectiveness of those with a stake in closer cross-strait economic and political ties. China has at its disposal a potentially powerful weapon to keep Taiwan from drifting away. But there is serious doubt whether Beijing's leaders have the political self-restraint to use this weapon effectively over the long run.

#### For more information, see

*Chinese Economic Coercion Against Taiwan: A Tricky Weapon to Use*, Murray Scot Tanner, MG-507-OSD, 2007. Online at <http://www.rand.org/pubs/monographs/MG507/>

## Building Moderate Muslim Networks

- The U.S. government should help build moderate Muslim networks and link these efforts to overall U.S. strategy and programs.
- Partners should be those who adhere to key dimensions of democratic culture.
- Initial efforts should focus on a core group of reliable partners and expand from there.
- An effort should be made to promote the flow of moderate ideas to the Middle East from Muslim communities in Europe, Turkey, Southeast Asia, and other open societies.

Over the past two decades, radical and dogmatic interpretations of Islam have gained ground in many Muslim societies. Through the threat of violence, radical Islamists have intimidated or silenced moderate and liberal Muslims who espouse the key principles of democratic culture, including recognition of human rights, respect for diversity, acceptance of non-religious sources of law, and opposition to terrorism. While the radicals are a minority throughout the Muslim world, they have developed extensive networks spanning the Middle East and Muslim communities in North America and Europe. Moderate and liberal Muslims, although a majority in most Muslim countries and communities, lack similar networks and may need external assistance to build them.

Recognizing the parallels between the Cold War and the current radical Islamist challenge, RAND examined the U.S. and allied efforts to build democratic networks and institutions during the Cold War and derived lessons that can be applied to build moderate Muslim networks today. The researchers identified the similarities and differences between the Cold War and the current Islamist challenge, evaluated U.S. programs of engagement with the Muslim world, and developed a road map for building moderate Muslim networks. The authors' road map calls for creating an international database of potential and existing partners, formulating a well-designed plan for supporting these networks, and arranging for "feedback loops" to keep the effort on track.

### During the Cold War, the United States Acted Like a Foundation to Support Moderate Networks

During the Cold War, the United States provided money and organization to foster the creation of democratic institutions that could contest Communist efforts to dominate European civil society. One important feature of U.S. Cold War network building was the link between the public and private sectors. Within Europe, there was already a democratic intellectual movement opposed to Communism. What was needed was money and organization to turn individual efforts into a coherent campaign. In almost all of these endeavors, the U.S. government acted like a foundation: It evaluated projects to determine whether they promoted U.S. objectives, provided funding for those that did, and then let the organizations fulfill their objectives without interference.

### Four Factors Made the Cold War Networking Efforts Successful

The success of the network-building efforts of the United States and its allies can be attributed to a few key factors. First, the network development efforts were part of an overall strategy that addressed politics, economics, information flow, and diplomacy. Second, U.S. networking efforts tapped into and nurtured existing movements. Third, there was a broad consensus within the United States and allied countries that the West needed to confront Communism on the ideo-

Networking Challenges: The Cold War and Today's Middle East		
	Cold War	Middle East (Today)
Role of civil society	Historically strong	Not historically strong but developing
Hostility between United States and targeted society or government	Open hostility between USSR and United States Western societies favorable United States seen as liberator in Western Europe	U.S. democracy promotion and network building seen by authoritarian U.S. Middle East security partners as destabilizing United States not seen as liberator
Intellectual and historical ties	Strong	Weak
Adversary's ideology	Secular	Religion-based
Nature of opposing networks	Centrally controlled	Loose or no central control
Policy challenges	Less complex	More complex

logical front in addition to the military front; this consensus allowed covert networking efforts to continue without political interference. Finally, the U.S. government allowed the groups it supported to maintain a high level of independence while ensuring that their activities promoted long-term U.S. strategic goals.

### Similarities and Differences Between the Cold War Environment and the Current Islamist Threat

As in the late 1940s, the United States confronts a confusing geopolitical environment with new security threats. At the beginning of the Cold War, the threat was a global Communist movement led by a nuclear-armed Soviet Union; today, it is a global jihadist movement striking against the West with acts of mass-casualty terrorism. In both cases, policy-makers recognized that the United States and its allies were engaged in an ideological conflict that had to be contested across diplomatic, economic, military, and psychological dimensions. But in contrast to the Cold War, the current battle involves shadowy groups, not a single entity. The Soviet Union was a nation-state with a clear government structure and defined geographical borders. The radical Islamist threat comprises non-state actors that control no territory and reject international norms, and are not subject to normal means of deterrence. The table above summarizes the key differences between the Cold War environment and the Muslim Middle East today. Because of these differences, the United States must develop a new network-building strategy to meet the challenge.

### How the United States Can Foster Moderate Muslim Networks

RAND recommends that the United States concentrate on the partners, programs, and regions where U.S. support has the greatest likelihood of affecting the war of ideas in the Muslim world. The first step in this strategy is for the U.S. government and its allies to make a clear decision to help build moderate Muslim networks and to explicitly link this goal with overall U.S. strategy and programs. Effective implementation of this strategy requires the creation of an institutional structure within the U.S. government to oversee the effort. The U.S. government must build the infrastructure to execute this strategy, including ever-evolving criteria that distinguish true moderates from extremists camouflaged as moderates, an international database of potential and existing partners, and mechanisms for monitoring, refining, and overseeing the program.

Partners in the moderate network-building effort should be those who adhere to key dimensions of democratic culture. The effort could initially focus on a core group of reliable partners whose ideological orientation is known and work outward from there. The authors recommend targeting five groups as potential building blocks for networks: liberal, secular Muslim intellectuals; young, moderate religious scholars; community activists; women's groups engaged in gender equality campaigns; and moderate journalists. Functioning again in a foundation-like role, the United States should assist programs that promote moderate media, gender equality, advocacy for moderate agendas, and democratic education, particularly programs that derive authoritative teachings supportive of pluralistic values from Islamic traditions.

The researchers propose a shift of priorities from the Middle East to regions of the Muslim world where greater freedom of action is possible, the environment is more open to activism, and there is a greater likelihood of success. The authors focus on network-building opportunities in the Muslim diasporas in Europe, among Muslims in Turkey and Southeast Asia, and in some of the more open societies in the Middle East. Recognizing that radical ideas from the Middle East are being disseminated to the rest of the Muslim world, RAND recommends opening channels of communication that will encourage the dissemination of modern, mainstream interpretations of Islam back into the Middle East from moderate Muslims elsewhere.

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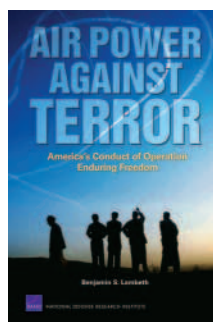
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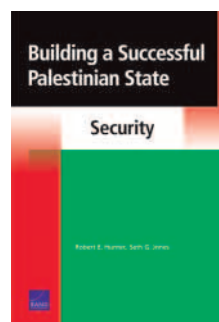
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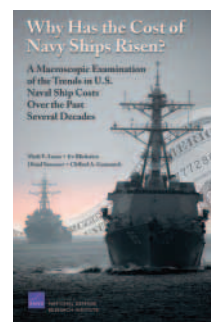
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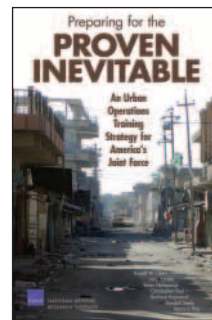
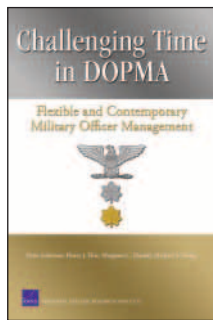
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Washington Office  
1200 South Hayes Street  
Arlington, VA 22202-5050  
TEL 703.413.1100  
FAX 703.413.8111

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4570 Fifth Avenue  
Suite 600  
Pittsburgh, PA 15213-2665  
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FAX 412.683.2800

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RAND Gulf States Policy Institute  
P.O. Box 3788  
Jackson, MS 39207-3788  
TEL 601.979.2449  
FAX 601.354.3444

RAND Europe  
Westbrook Centre  
Milton Road  
Cambridge CB4 1YG  
United Kingdom  
TEL +44.1223.353.329  
FAX +44.1223.358.845

Doha Office  
RAND-Qatar Policy Institute  
P.O. Box 23644  
Doha, Qatar  
TEL +974.492.7400  
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